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ADDRESSES AND ORIGINAL ARTICLES

THE INCIDENCE MORTALITY, AND TREATMENT OF HÆMORRHAGE IN GASTRIC AND DUODENAL ULCER

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In spite of advancing knowledge in the fields of diagnosis and pathology we have evidence that peptic ulcer and its complications are becoming more rather than less frequent (Wilkie 1927 Ryle, 1932) Of the complications hæmorrhage is the commonest occurring at one time or another in approximately a third of all cases (Table I) If we except perforation it is also the most disturbing complication For these reasons but also because new measures of active treatment (Gordon Taylor 1935 Meulengracht 1935) have recently been advocated the whole subject of bleeding peptic ulcer may be considered ripe for review

Judgment in the face of a severe gastric or duodenal hæmorrhage must find its basis in pathological insight a sound knowledge of prognostic criteria and a just appreciation of therapeutic possibilities whether medical or surgical In the matter of the relative claims of medicine and surgery in the treatment of chronic ulcers uncomplicated by hæmorrhage we have always endeavoured to maintain a just balance of opinion For actively or recently bleeding ulcers we have almost always concluded in favour of *medical treatment*. Although we have retraced our steps for the purposes of this communication we see no reason to feel regret for past decisions Our reasons for conservatism backed by an analysis of our experience will follow but by way of introduction and as a reminder of practical difficulties two cases are described

The first case the only one in which J A R. has ever invited the cooperation of a surgical colleague was that of a man just past middle life who was known from clinical and X ray evidence to have a large ulcer on the lesser curvature who started to bleed profusely shortly after admission to hospital and whose hæmoglobin fell to 18 per cent. on more than one occasion transfusions of blood and the usual routine treatment notwithstanding The surgeon declined to operate and the patient made a complete recovery eventually losing his ulcer deformity

The second case was one of grave hæmorrhage also in a middle-aged man In this case medical treatment had been instituted with a completely satisfactory response but in spite of reasoned protests the patient was taken out of the hands of his doctor and J A R and operated upon No trace of an ulcer was found

These two cases exemplify three outstanding difficulties (1) the difficulty of giving a prognosis even when we know something of the nature site and size of the lesion and can gauge the amount and continuance of the blood loss (2) the difficulty of refraining from active interference because we possess this knowledge and because we are anxious; and (3) the difficulty in *many* instances of being sure whether there is a demonstrable ulcer present at all.

In the first case even if surgery after transfusion could have saved the patient's life it would have been a wrong decision for it would have added an undeniable risk, the necessity for which was disproved by the subsequent event. In the second case a quite unnecessary risk was actually taken with no benefit to the patient.

In a given case of sudden gastric or duodenal hæmorrhage having excluded such other causes as hepatic cirrhosis splenic anæmia cancer and the hæmorrhagic diathesis we are usually entitled to make a diagnosis of peptic ulcer the commonest *cause of bleeding from these sites* In *many* cases we can on the basis of history hazard a reasonable guess as to whether the bleeding comes from a recent or acute ulcer or from an old or chronic one Experience tells us that death very rarely results from recen ulcers that is to say in young subjects or in cas lacking a dyspeptic history Experience also tel us that in the great majority of cases of bleedin from chronic ulcers the immediate prognosis is goo however severe the bleeding There are howeve wide discrepancies in the mortality figures reporte in the literature, and as it is largely upon a ju estimate of risks that our choice between conservati treatment and more active forms of interventio must be based a new and careful study of progno must be allowed to precede all other considerations

In a long experience of post-mortem work we can recall only a small series of peptic ulcers fatal through bleeding In most of these there was a large posterior and often adherent ulcer with a big vessel opened in its base a type of lesion which must provide considerable difficulties for the surgeon even in an otherwise fit patient In the course of preparing a Hunterian lecture on duodenal ulcer in 1932 J A R found only 25 deaths from hæmorrhage from duodenal ulcer during twenty years at Guy's Hospital as compared with 128 deaths from other complications and sequels of this lesion In our private practice we have never seen reason to adopt a pessimistic attitude in the presence of these hæmorrhages and we find that most physicians of wide experience share this opinion

Incidence of Hæmorrhage in Chronic Ulcer

A full history was obtained from all the 580 cases of ulcer investigated in New Lodge Clinic between February 1921 and February 1936 and from the 751 cases seen in private practice by J A R from 1920 to 1935 so that the two groups form a fairly reliable basis for estimating the incidence of hæmorrhage The figures obtained though lower than those given by most observers are still probably too high as cases with mild or trivial symptoms are not likely to be sent to the Clinic or to be seen in

TABLE I

Incidence of Hæmorrhage in Duodenal Gastric, and Post operative Ulcers (A F H and J A. R 's private cases)

—	Total.	Number with hæmorrhage	Percentage with hæmorrhage
Gastric ulcer	211	79	3[illegible]
Duodenal ulcer	912	268	2[illegible] 4
Post-operative ulcer	1[illegible]	72	40 3
Total	1310	419	31 3

consultation, so that the proportion with severe and serious symptoms, such as hæmorrhage, is likely to be excessive

Table I gives the percentage of gastric, duodenal, and anastomotic ulcer with hæmorrhage

Mortality of Hæmorrhage from Ulcer

The true mortality of gastric and duodenal hæmorrhage could be ascertained only by accurate statistics collected by general practitioners Hospital statistics are erroneous, as only the more serious cases are likely to be sent to hospital, and their seriousness is often greatly increased by the excitement and activity involved in their transference from home to hospital , preceding ill health and inadequate early treatment would further tend to increase the mortality Physicians and surgeons are also likely to see only the more serious cases in consultation

GENERAL PRACTICE

Unfortunately general practitioners rarely have sufficient leisure or assistance to keep records from which accurate statistics can be obtained But a death from hæmorrhage is such a dramatic event that it is not likely to be forgotten, so that the number of deaths given by practitioners can be accepted as correct, even if the total number of cases of hæmorrhage seen can be only roughly estimated by those who have been more than a few years in practice We find on inquiry that the incidence of new cases of hæmorrhage in most large general practices is between 1 5 and 2 per annum Twenty seven general practitioners, two of whom practise in London, nine in large towns, and the others in small towns and country districts, who have together been in practice for an average of nineteen years, have seen in all about 677 patients with hæmatemesis and melæna from ulcer Of these only 9 have died , these include the only 3 among the 677 who underwent operation This gives a mortality of 1 31 per cent If we make the more than ample allowance of 100 per cent for possible exaggeration in the number of cases seen we still have a mortality of only 2 6 per cent

HOSPITAL STATISTICS

The following statistics were obtained by Dr A M Bubey from an analysis of all cases of ulcer admitted under the care of A F H from the time he took charge of beds in Addison and Mary wards at Guy s Hospital late in 1919 to the end of 1935 All of the cases included as " hæmorrhage on admission" had had bleeding sufficiently severe to necessitate admission to hospital and all of them bled very shortly before entry to the wards, only 3 having bled as long as forty eight hours before

During the years 1919–35 inclusive there were 371 cases of chronic gastric duodenal, and anastomotic ulcer admitted Of these 82, or 22 per cent , had bled within forty eight hours of admission in 32 of the 82 or 39 per cent there was a history of an earlier hæmorrhage which in many cases was several years before, in one case twenty years before, admission In 106 of the total 371, or 29 per cent , a previous hæmorrhage was recalled This figure is too low for of the 371 case records 50 were incomplete Of the 82 cases admitted for hæmorrhage 54 had gastric ulcers (66 per cent) 22 duodenal ulcers (26 per cent), and 6 anastomotic ulcer (8 per cent) As there were 191 gastric ulcers 167 duodenal ulcers and 10 gastro jejunal ulcers in the series (in addition to 3 with both gastric and duodenal ulcers), the proportion of cases admitted for hæmorrhage in gastric ulcer was 27 per cent , in duodenal ulcer 13 per cent , and in anastomotic ulcer 60 per cent

In 4 cases death was directly attributable to hæmorrhage The mortality rate for the whole group of cases admitted for hæmorrhage is therefore 4 in 82, or 4 8 per cent In the first of the fatal cases glands suggestive of carcinoma were found post mortem, but unfortunately the microscopical report is lost If the ulcer was malignant, the mortality from hæmorrhage from simple ulcer would be reduced to 3 in 82, or 3 6 per cent The mortality rate from hæmorrhage of patients admitted for hæmorrhage (82) or with a history of one or more hæmorrhages is 4 out of 156, or 2 5 per cent , for reasons given above this percentage is certainly too high The mortality from hæmorrhage of all cases of ulcer, including those which have never bled, is 4 out of 371, or 1 1 per cent

From the histories of the patients who died and their autopsy findings it would appear that Cases 1 and 4 might possibly have been saved by surgery

CASE 1 —Female, 53, admitted for three successive hæmorrhages just before entry She gave a history of hæmorrhage one year ago The day after admission there was a small hæmatemesis Three weeks later four hæmorrhages occurred and she died the next day " A huge gastric ulcer was found, with a large gaping artery at its base Glands were present suggestive of carcinoma "

CASE 2 —Male, 48, gave a history of a severe hæmorrhage eighteen months before Two days after coming into hospital he had a severe hæmorrhage The following day he had another severe hæmatemesis and died soon afterwards " On the lesser curvature slightly nearer the pylorus than the cardia was a large saddle backed ulcer with smooth base and raised sharply defined edges The ends of two small arteries lightly plugged with clot were visible in its base *It was firmly adherent to the pancreas* at about its middle, which was converted into a fibrous sac containing the somewhat dilated and reddened pancreatic duct The pancreas was indurated "

CASE 3 —Male, 29 admitted for hæmatemesis Nov 18th 1930 He had other severe hæmorrhages in the ward for which repeated transfusions were given, but he died Dec 22nd " A perforation which would admit the tip of the little finger was seen on the anterior surface of the first part of the duodenum It was shut off from the abdominal cavity by the transverse colon which acted as a roof A considerable amount of blood tracked from the perforation backwards into the lesser sac, which contained one or two ounces of blood clot Almost the entire circumference of the duodenum was occupied by a chronic ulcer, measuring 1 in by ½ in., surrounded by overhanging and thickened fibrous edges On the floor of the ulcer a vessel had been completely divided so that the mouth of the proximal and distal ends were both gaping On cutting through the floor of the ulcer at least 4 mm of white scar tissue was encountered and was found to be adherent to the pancreas "

CASE 4 —Male, 43, admitted for severe hæmatemesis nine hours previously Two large hæmorrhages occurred in the ward. Three transfusions were given, but the patient died nine days after entry A large eroded vessel was found at the base of an acute gastric ulcer on the lesser curvature

ANALYSIS OF CASES SEEN IN CONSULTING MEDICAL PRACTICE (J A R)

The cases which I see in consulting practice include patients from various classes, excepting only the poorest class In a considerable proportion of my private cases I have been called in during an active hæmorrhage Others have been referred to me soon after their recovery from such a hæmorrhage Others again have been seen for dyspeptic symptoms, but a clear account of one or more hæmorrhages has been obtained and entered in my notes Very few have suffered the disadvantage of transportation while bleeding The great majority were promptly diagnosed and treated. Only a very small minority were given transfusions of blood All had definite melæna or red hæmatemesis at intervals of months or years Many patients had recurrent hæmorrhages

In my analysis (Tables II and III) I have divided the hæmorrhages into severe and slight. Some of the slight cases could probably with reason, have been transferred to the severe group The cases which were classified as severe' were definitely described as such or were in bed for a period of weeks or were recorded as having hæmoglobin figures of 50 per cent or lower The duodenal and gastric ulcers and the anastomotic including other post-operative ulcers were at first separately considered but only the collective figures are here given One untraced case of bleeding peptic ulcor is included for the purpose of this analysis among the fatalities

TABLE II

Incidence of Hæmorrhage in Duodenal Gastric and Post operative Ulcers (J A R.'s series)

(a) Total cases D U 563 G U 131 post-op U 60	754
(b) Total cases with hæmorrhage (severe and slight)	258
(c) Total cases with severe hæmorrhage	128
(d) Total hæmorrhages in 258 cases with hæmorrhage	390
(e) Total severe hæmorrhages in 128 cases with severe hæmorrhage	153
(f) Total deaths from hæmorrhage (complicated and uncomplicated)	10
(g) Total deaths from hæmorrhage uncomplicated by old age or by other illness which would have prohibited surgery	4

TABLE III

Mortality from Uncomplicated Hæmorrhage (J A R's series)

	Per cent
(a) Mortality from uncomplicated hæmorrhage in ulcer (754 cases)	0 5
(b) Mortality from uncomplicated hæmorrhage in cases of ulcer with hæmorrhage (258 cases)	1·6
(c) Mortality from uncomplicated hæmorrhage in cases of ulcer with severe hæmorrhage (128 cases)	3 1
(d) Mortality from uncomplicated hæmorrhage in all hæmorrhages (390 cases)	1·0
(e) Mortality from uncomplicated hæmorrhage in all severe hæmorrhages (153 cases)	2·6

There were no deaths from hæmorrhage among women with duodenal ulcer Duodenal ulcer was five times as common in men as in women in this series. Of the fatal hæmorrhages from gastric ulcer 2 were in men 2 in women

There were no deaths from hæmorrhage among the cases of anastomotic ulcer

The ages in the fatal cases of uncomplicated hæmorrhage were 55 50 36 and 26

The ages in the six fatal cases complicated by old age or other illness were 80 72 67 60 56 52 The complicating illnesses in the last four of these were gastric uræmia heart failure cellulitis of the arm and aortic disease respectively

Analysing the four fatalities from uncomplicated hæmorrhage we find that the youngest, aged 26, a case of duodenal ulcer confirmed radiologically was referred to me with an eighteen months history of severe epigastric pain with radiation through to the back suggesting a posterior ulcer involving the pancreas He went home for treatment and a few days later succumbed to an enormous hæmorrhage. A gastric surgeon of wide experience declined to operate

The second patient aged 36 had a history of ulcer dyspepsia going back at least six years. I was called to see him in an exsanguinated and emaciated condition ten days after a severe hæmatemesis. Melæna had continued. The pulse rate was 120 He died immediately after a blood transfusion.

The third patient was aged 55 He had had symptoms of a gastric ulcer for several years He was seen and admitted to hospital after a severe hæmorrhage and died in spite of routine treatment and a blood transfusion.

The fourth case aged 50 was not traced, her doctor having left the country For purposes of the analysis this case has been counted as a fatality

The suggestion that subsequent bleedings are more serious than a first bleeding is not supported by this series The 4 fatal uncomplicated hæmorrhages were all first hæmorrhages This agrees with Crohn s statistics concerning 101 cases of severe hæmorrhage from ulcer at Mount Sinai Hospital there was no previous hæmorrhage in any one of the 9 fatal cases 4 under medical treatment and 5 after operation

The number of subsequent hæmorrhages in individual non fatal cases varied from 1 to 9 The numerical excess of total hæmorrhages over the cases with hæmorrhage was 132 The excess of total severe hæmorrhages over the cases with severe hæmorrhage was 25

Surgery for Hæmorrhage from Ulcer (A F H)

There have been 586 cases of ulcer (110 gastric 379 duodenal, and 97 anastomotic) in New Lodge Clinic between February 1921 and February 1936 and in 3 of these all duodenal, the patient has died from hæmorrhage They were the only cases recognised as being unlikely to recover with medical treatment and they were therefore the only ones which were operated upon whilst still bleeding But surgery failed to save them not because their condition was too serious at the time of the operation for in each case transfusion had raised their hæmoglobin to a safe level, but because the three surgeons concerned, all very experienced very competent and very courageous had to content themselves with indirect operations, as they could not excise the ulcer on account of the adhesions and friable character of the inflamed tissues

In the first patient, a man of 55 a very large ulcer was found on the upper and posterior wall of the duodenum, half an inch from the pylorus invading the pancreas The gastroduodenal and right gastro-epiploic arteries were tied, the ulcer was invaginated with catgut sutures, and a gastrojejunostomy was performed. The hæmorrhage however continued and in spite of two further transfusions he died the following day

The second case that of a man of 39 was an example of familial duodenal ulcer one brother having died from perforation of a jejunal ulcer and another from duodenal hæmorrhage The patient himself had had three operations for ulcer before the final one which preceded his death A gastrojejunostomy was performed in 1916 for a duodenal ulcer which had been present for a year ; in 1925 a callous gastrojejunal ulcer was excised and a new gastrojejunostomy performed subsequently a jejunal ulcer which had almost perforated into the transverse colon was excised and the normal anatomy restored. In 19 8 a new duodenal ulcer developed, which soon led to pyloric obstruction and serious hæmorrhage The patient died in spite of partial gastrectomy with duodenal exclusion and infolding of the ulcer The surgeon wrote to me :

I am very glad that I did not go on any further and deal with the mass in the neighbourhood of the first part of his duodenum I should certainly have slain him on the table "

The third patient a man of 37 had had symptoms of duodenal ulcer since he was a boy He had five very severe hæmatemeses in the last five years, the third a month before admission. He was admitted on Sept 3rd 1935 From that time he had almost daily hæmorrhages his hæmoglobin dropping from 92 per cent on Sept 4th to 3[illegible] per cent on the 16th As the hæmorrhage continued in spite of treatment an operation was performed on Oct 6th after three transfusion which raised his hæmoglobin to 68 per cent His urine was normal and his systolic blood pressure 150 mm, but his blood-urea varied between 54 and 86 mg per 100 c cm, although he was given no alkalis After the separation of a large mass of dense adhesions the duodenum was found to be much scarred and acutely inflamed over its whole circumference It was obvious that excision was impossible and that the bleeding point could not be dealt with directly, as the incision would have had to cross the ulcer A partial gastrectomy with duodenal exclusion was therefore performed He continued to bleed, and in spite of further transfusions his hæmoglobin fell to 28 per cent and his blood urea rose to 432 mg per 100 c cm on the day of his death (Oct 11th)

Post mortem an enormous single ulcer was found occupying the entire circumference of the duodenum except for about 1 cm on the lesser curvature The gastro-duodenal artery with a hole in its centre was exposed in the centre of the ulcer The base of the ulcer was adherent to both the inferior vena cava and the common bile duct so that neither excision nor ligature of the exposed artery would have been possible It was clear too that neither medical treatment nor any indirect operation could have saved him

Of the many cases of severe hæmorrhage from ulcer seen by A F H among private patients before the war in 1919 and 1920, and outside New Lodge Clinic since 1920 only one died from hæmorrhage—a patient whose fatal hæmorrhage in 1914 followed immediately after a gastrojejunostomy for a duodenal ulcer which had never bled before An operation was advised on account of hæmorrhage in only one of these cases seen in 1913

The patient a man of 60 with severe arterio sclerosis, was urged to have a gastrojejunostomy performed when he was seen for the first time some months before his hæmorrhage, as he had a very long history of duodenal ulcer which had led to severe pyloric obstruction He refused to submit to surgery, and continued to wash his stomach out two or three times a day as he had done for many years Three months later he had a severe hæmorrhage which was repeated at the end of a week's starvation, when he was seen for the second time An immediate operation was advised The next morning Lord Moynihan found an enormous duodenal ulcer producing pyloric obstruction he performed a gastrojejunostomy and cut off the blood supply to the ulcer by overlapping sutures round it The patient did very well he died four years later from pneumonia without having had any recurrence of gastric symptoms

The alarm engendered by the appearance and circumstances of a grave internal hæmorrhage, improved surgical preparation and technique, and subservience to the idea that an attempt should be made to control bleeding mechanically at its seat of origin have between them been allowed to constitute a plea for bolder and more drastic action We hope that we have shown that while such action may indeed be dramatic and is certainly courageous, and while it may frequently achieve success in skilful hands it can only in very exceptional circumstances be regarded as judicious In less experienced hands we fear that it will immediately increase the mortality from this accident

General Treatment

Of conservative treatment which is not always accorded the detailed attention which it deserves, the following summary should suffice When local conditions are favourable it should be carried out without transportation of the patient When transportation is essential the optimum moment should be chosen for it and the completest possible comfort and immobilisation should be secured for the patient who must be kept warm and recumbent In all cases a quarter of a grain of morphia should be given at once hypodermically and repeated at intervals, judiciously and in accordance with the needs of the case, during the first 24–48 hours This and watchful nursing are the most important prescriptions All mouth feeding should be forbidden for 24 or 48 and in rare cases 72 hours Longer starvation in severe cases is unwise In slight cases it is unnecessary A closer study of the advantages of earlier and more liberal mouth-feeding in severe hæmorrhage is needed The mouth may be rinsed, but at first not even water should be swallowed Normal saline solution, from half to three quarters of a pint, slowly administered by rectum, should be given four hourly By raising the foot of the bed on a block the pressure in the rectum is reduced and the fluid is more easily retained

It is rarely necessary to give any treatment for the constipation which occurs as a result of the starvation and administration of morphia, as the bowels generally open on the third day after one of the injections of saline solution

Injections of proprietary hæmoplastic sera are of no value, and the claim that they encourage coagulation has not been substantiated (Christie and Gulland)

The hygiene of the mouth must be attended to, for the risk of parotitis in the more serious cases is considerable

When the anxious earlier phase has passed, medical treatment as for an uncomplicated ulcer is gradually instituted Investigation with X rays and test meal should be postponed until the patient's general condition and hæmoglobin percentage justify movement This means waiting for three or four weeks, by which time it is often found, especially with gastric ulcers, that no abnormality can be discovered with the X rays This appears to be due to acceleration in the healing of an ulcer after a hæmorrhage, a belief which receives confirmation from the rapid disappearance of occult blood from the stools Chemical and spectroscopic tests in the majority of cases become negative at an earlier date after the beginning of treatment if a gross hæmorrhage has occurred than in cases in which there has been no obvious hæmatemesis or melæna

Transfusion

We are inclined to think that transfusion is not without danger, a conclusion also reached by Cullinan and Price in their study of cases treated at St Bartholomew's Hospital It is true that transfusion is not likely to be used except for severe cases, but the mortality appears to be higher where transfusion is often employed than elsewhere Christiansen (1934) states that the mortality has doubled in the Kommune hospitalet, Copenhagen, since transfusion has become common practice

Cases should be selected for transfusion with more discrimination than is usual in hospitals where the facilities are greatest, and care should be taken to give not more blood than is required As Cullinan and Price have pointed out, there is no evidence that transfusion helps to arrest hæmorrhage, in fact it occasionally has the opposite effect being followed almost at once by a return of bleeding in cases in which hæmorrhage has ceased Moreover the reaction following transfusion is sometimes severe, and this may be the direct cause of death without further hæmorrhage in patients who are already in a very weak condition

Transfusion should in general not be given unless the hæmoglobin percentage is under 30 and the patient appears to be in danger of death from anæmia About ten ounces is sufficient, and transfusion should not be repeated unless the hæmorrhage recurs Transfusion is not required for the restoration of the blood to the normal level as the rise to normal is sufficiently rapid when thirty grains of iron and ammonium citrate are given three times a day

A man of 25 whose hæmoglobin had dropped to 15 per cent after repeated severe hæmorrhages from a duodenal ulcer received a transfusion of 9 oz. of blood at once Iron and ammonium citrate 30 grains three times a day was then administered The hæmoglobin rose from 15 to 30 per cent on the third day 40 per cent on the fourth 60 per cent on the seventh 68 per cent on the fifteenth and 85 per cent on his discharge on the fortieth day after admission

Clotting is most likely to occur when the circulation is at a low ebb with the blood pressure low and the patient collapsed. A rapid rise in blood pressure may lead to recurrence of hæmorrhage which would not take place if the rise in hæmoglobin is as gradual as it is with the administration of iron

If it is decided that an operation must be performed in order to save the patient's life transfusion should be given with the object of raising the hæmoglobin to a level which will make the operation safe It is worth noting however that the only successful operation for hæmorrhage on a case of our own was performed before the war and consequently no preliminary transfusion was given although the patient, a man of 60 was in a condition of extreme anæmia and had been completely starved for eight days Whether continuous drip transfusion by means of which the hæmoglobin percentage can be raised rapidly from 20 or 30 per cent to 80 or 90 per cent. has strong advantages over a single transfusion of twenty ounces given before operation and a second transfusion of twenty ounces given during or immediately after the operation is a matter deserving of further inquiry We have never seen a case in which operation failed to save the patient because the hæmoglobin was insufficiently high; the technical difficulties caused by the size, position and adhesions of the ulcer have always been the cause of failure Continuous transfusion is likely to be actually dangerous if the surgeon is unable to secure the bleeding point, as the sudden rise of blood pressure would be likely to cause a recurrence of hæmorrhage after an indirect operation such as gastrojejunostomy or partial gastrectomy with duodenal exclusion performed for a bleeding duodenal ulcer

There are other factors which contribute to death following hæmorrhage besides hæmoglobin deficiency Among these loss of salt and fluid and a rising blood urea should be especially worthy of study

Iron

After a single small hæmorrhage regeneration of blood is rapid and no special treatment is required On the other hand after repeated small hæmorrhages or after a single massive hæmorrhage recovery can be greatly hastened by the administration of iron in adequate doses by mouth Iron and ammonium citrate is always well tolerated and the rapid rise of hæmoglobin following its use appears to hasten the healing of the ulcer Unless an operation is contemplated it is thus unnecessary to give more than a single transfusion as when thirty grains of iron and ammonium citrate are given three times a day there is generally an average gain of between 1 and 2 per cent of hæmoglobin every day until the normal level is reached. Table IV gives the hæmoglobin percentage in a series of cases in which weekly estimates were made whilst iron was being given for the anæmia resulting from hæmorrhage after an ulcer The patients were not transfused and were on the ordinary strict ulcer diet

TABLE IV

Week of treatment	M 35 D U	F 63 G U	F 40 G J U	M 4[illegible] D U	M 60 D U
—	50	45	62	58	62
1	69	57	87	78	64
2	80	60	90	95	70
3	90	75	—	—	70
4	—	93	—	—	—

Conclusions

1 The *incidence* of hæmorrhage is about 30 per cent. in gastric and duodenal ulcer and 45 per cent in anastomotic ulcer

2 *Mortality*—The danger of hæmorrhage from ulcer has been grossly exaggerated in a number of papers recently appearing in British journals The mortality among patients with hæmorrhage from an ulcer is about 1 5 per cent. in general practice This figure is the nearest possible approach to the natural mortality As the incidence of hæmorrhage in cases of ulcer is about 30 per cent. the mortality from hæmorrhage in all cases of ulcer whether they have previously bled or not is about 0 4 per cent The mortality of cases of ulcer admitted into Guy's Hospital under A F H on account of hæmorrhage is 4 8 per cent. The mortality from hæmorrhage in patients with a history of hæmorrhage from ulcer or admitted for ulcer is under 2 5 per cent and the mortality from hæmorrhage of all cases of ulcer including those which had never bled is about 1 per cent Comparing these figures with a private series (J A R) we find a mortality of 3 1 per cent from hæmorrhage in cases of severe hæmorrhage and a mortality of 0 5 per cent from hæmorrhage in all cases of ulcer

3 *Surgery as prophylaxis*—As the total mortality of all operations performed for gastric and duodenal ulcer is considerably greater than that of the mortality from hæmorrhage among all cases of ulcer and as hæmorrhage is by no means rare after operations on patients with ulcer who have already bled it is obvious as Gordon Taylor has also pointed out that surgery cannot be regarded as a means of prophylaxis against fatal hæmorrhage. According to Balfour hæmorrhage occurred after operation at the Mayo Clinic in 13 per cent of cases of ulcer with a previous hæmorrhage, but in only 0 9 per cent. of cases with no history of previous hæmorrhage Even partial gastrectomy does not prevent a reoccurrence of hæmorrhage We have seen four cases in which hæmorrhage recurred within a year of the performance of a subtotal gastrectomy for ulcer

4 *Surgery as treatment*—It is generally not very difficult to recognise the rare cases of bleeding ulcer which will not recover from medical treatment Unfortunately they are the same cases as those in which direct treatment of the bleeding point by operation is likely to be impossible so that even when the operation is performed by surgeons of great experience and the patient has been adequately prepared by transfusion the mortality after operation must be extremely high Among the 4 fatal hospital cases under A F H 2 might possibly have been saved by operation on the other hand an operation failed to save any of the 3 fatal New Lodge Clinic cases and the 6 fatal cases among the [illegible] collected from general practice included the only 2 which underwent operation

There can be little doubt that operation for a large proportion of cases after continuous transfusion, as recently advised by Gordon Taylor, would lead to a considerable increase in the death rate, as the mortality of interval operations for ulcer is at least as high as the actual mortality from hæmorrhage

5 *Early feeding*—There is no evidence to show that malnutrition was a factor in any of the fatal cases among the series analysed in this paper It

Lenhartz and recently by Holmgren and Meulengracht, would have prevented any of the deaths in the series of cases which form the basis of this investigation

6 *Transfusion and iron*—The remarkably low mortality among cases seen in general practice indicates that the old fashioned treatment with rest in bed, starvation, and morphia is all that is needed in the vast majority of cases, as very few received transfusion or underwent operation In spite of this we believe that transfusion may occasionally save the life of patients who would otherwise die from anæmia, and that it is an almost essential preliminary in the rare cases in which operation is indicated Apart from its use as a preliminary to operation a *transfusion should not be given unless the percentage* of hæmoglobin is under 30 per cent, not more than ten ounces of blood should be introduced at a time, and the transfusion should not be repeated unless hæmorrhage recurs There have been favourable reports on the immediate benefits of continuous drip transfusion (Gordon Taylor), but it is doubtful whether the method should ever be employed in cases of gastric hæmorrhage excepting as a preparation for immediate surgery

Large doses of iron and ammonium citrate can be safely given from the third day following a hæmorrhage, they lead to a rapid return of hæmoglobin to a normal level and in this way greatly hasten convalescence

7 If operation is reserved for the very rare cases in which it seems probable that the source of bleeding is a large hole in a sclerotic vessel exposed at the base of a chronic ulcer, and if transfusion is given only under the circumstances and by the method described above, it should be possible to obtain a still further reduction in the already low death rate from hæmorrhage in gastric, duodenal, and anastomotic ulcer

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Fellowship of Medicine and Post Graduate Medical Association—An afternoon course in dermatology, which is open to non members, will be given at St John's Hospital (Jan 4th to 31st), an all-day course in cardiology, also open to non members, at the National Heart Hospital (Jan 11th to 22nd) Other courses will be given on advanced urology at St Peter's Hospital (Jan 18th to 30th) and on chest diseases at the Brompton Hospital (Jan 25th to 30th) A course of surgical tutorial classes, specially intended for candidates for the F R C S (final) examination, will be given at the National Temperance Hospital on Tuesdays and Thursdays at 8 30 P M from Jan 12th to March 4th Further particulars may be had from the secretary of the fellowship 1, Wimpole-street London W 1

BLOOD CHANGES AFTER SURGICAL OPERATIONS

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The methods used were as follows —

1 Hæmoglobin estimations by the Haldane colorimetric method, on all cases

2 Estimations of the relative cell and plasma volume by hæmatocrit, confirming the hæmoglobin estimations

3 Plasma chloride estimations on many of the cases by the method of Claudius (1924)

4 Plasma protein estimations on the majority of the cases, *using a modification of the method of Wong* (Peters and Van Slyke 1932)

Blood was obtained from a deep ear puncture and run into a small tube containing a minimal quantity of heparin. 0 4 c cm was collected without squeezing Except in certain cases where venous blood was obtained simultaneously, only those samples of capillary blood which flowed freely and spontaneously were used for analysis In a number of cases venous blood was also used. The patients were bled before operation and at frequent intervals (usually daily) afterwards

The patients are grouped under the following heads according to the after-treatment they received —

Group 1 (12 cases)—No special treatment

Group 2 (27 cases)—Treated with rectal infusions or "forced fluids" by mouth.

Group 3 (9 cases)—Treated with intravenous saline

Unclassified (2 cases)

The results of hæmoglobin, chloride, and protein estimations are presented separately for each group

Results

Hæmoglobin—It is obvious that hæmorrhage during operation reduces the amount of hæmoglobin and the number of red cells in the body, but the change does not become evident in blood samples until *dilution has begun to restore the total volume* to normal Group 1 patients who received no excess of fluids after operation, or were even restricted in their fluid intake, showed a slow reduction of hæmoglobin percentage, which did not reach its new level, determined by the amount of hæmorrhage, for several days This means that the normal process of dilution took a long time Under these conditions recovery was slow and many of the patients complained of severe thirst and showed the dry tongue and sunken features found in dehydration Figs 1 and 2 are examples of results obtained in this group Group 2 consists of patients who were more ill and who were therefore given rectal infusions or forced fluids by mouth Their blood dilution (and therefore restoration of the blood volume) was more rapid, and so was their recovery Figs 3 and 4 are representative

The accompanying Table summarises the statistical information, relevant to the present investigation, which can be derived from the data

The values of *t* given at the end of the Table were obtained by comparing the two groups by the Fisher *t* test technique These values do not reveal significant differences between the groups either for initial or for

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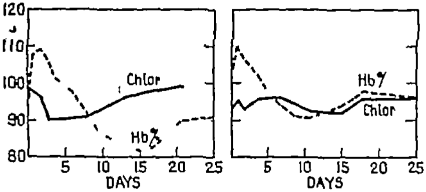
* This research has been made possible through the generosity of Sir Leonard Lyle Bt deputy president of the hospital.

FIG 1 FIG 2



FIGS 1 & 2.—Chlorides (millimols) and hæmoglobin (per cent) of untreated patients who received no excess of fluids after operation.

Days refers to time after operation when specimen was obtained Results recorded at 0 days refer to specimens obtained before operation

final hæmoglobin values but the difference in the time taken to attain *maximum dilution is highly significant* This result implies that if the extent of the dilution of the hæmoglobin of the blood as measured here is a satisfactory indication of the restoration of plasma volume after operative hæmorrhage then the restoration occurs in the treated cases more quickly than in the untreated cases and the difference is highly significant

The control group (the untreated cases Group 1) is small in size and, since both are heterogeneous with respect to the sort of operation performed, it may not be strictly comparable with the experimental group (the treated cases, Group 2)

Chlorides—No important reduction in the plasma chlorides was found but some cases treated with large quantities of saline per rectum developed hyperchloræmia with hydræmia Fig 3 is an example of this

Proteins—The results were compared on the following basis If blood is diluted the hæmoglobin and protein will show the same percentage fall provided that the protein is expressed (like the hæmoglobin) as a fraction of whole blood Of the 37 patients thus investigated 21 suffered no loss of protein after the operation beyond the loss due to hæmorrhage The other 16 showed a loss which was rapidly restored in 11 of them

—	Initial Hb		Final Hb		Time.	
	Un treated cases	Treated cases.	Un treated cases	Treated cases	Un treated cases.	Treated cases.
Mean	95·6 %	91 1 %	83 8 %	78 3 %	9 1 day	4·4 day
Variance	138 7	162 0	128 3	106·0	12 3	3 7
Coeff of variation	12 3 %	14·0 %	13 5 %	13 1 %	38·6 %	43 7 %
No in group	10	27				
t* (n=35)	+0·872		+1·925		+5·22	

Sign obtained thus Untreated cases—treated cases
Two cases from Group 1 not included owing to complications

Of 12 untreated cases (Group 1) 6 suffered a loss of protein and 6 did not Of the 19 cases receiving additional fluid (Group 2) only 5 showed a temporary loss of protein while 14 lost none in fact they showed a steady increase Of 6 cases receiving intravenous salines (Group 3) 5 lost protein which was *not recovered in three of them and only* 1 did not (case described later see Fig 5)

A temporary rise of hæmoglobin percentage above the pre-operative figure occurred in 14 of the 16 cases sustaining a loss of protein but in only 3 of the 21 who gained protein

Pulmonary œdema—Four cases developed pulmonary *œdema while the plasma protein was below* the normal of 5 8 per cent (Figs 5 and 6) Two of these sustained a temporary loss of protein one a permanent loss and one described later a steady increase In this case and in the two whose protein loss was only temporary the abnormally low plasma protein percentage was due to rapid dilution of the blood Only two other cases showed a temporary diminution of their plasma protein and these had no symptoms of pulmonary œdema In three of the four cases of pulmonary œdema the condition developed after the administration of intravenous saline.

FIG 3

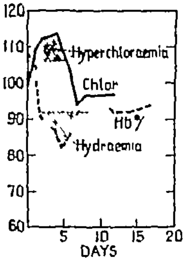


FIG 3.—Chlorides and hæmoglobin of a patient who received 8½ pints of saline by rectal infusions within 3 days

FIG 4

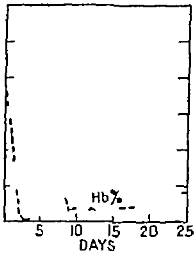


FIG. 4.—Hæmoglobin of a patient who received 5 pints of saline and 5 pints of glucose solution per rectum within 4 days

Discussion

A number of workers[1 2 5 8] have shown that shock is accompanied by increased concentration of the blood-cells particularly in the capillaries Cannon Frazer and Hooper (1917) and Bazett (1918) found a temporary concentration of red cells in the blood after operations Bazett (1918) and Robertson (1935) have shown that variations in the hæmoglobin percentage

FIG 5

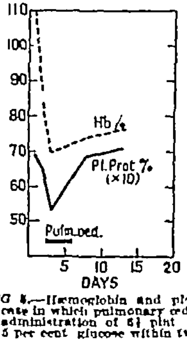


FIG 5.—Hæmoglobin and plasma protein percentages in a case in which pulmonary œdema developed after intravenous administration of 6½ pint of alternate normal saline and 5 per cent glucose within two days

FIG 6

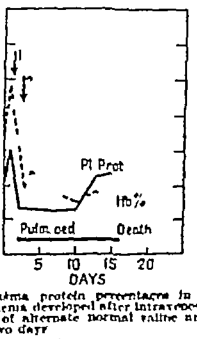


FIG. 6.—Hæmoglobin and plasma protein percentages in a case of postoperative pulmonary œdema At I the patient received 6 oz of blood and 10 oz of gum saline intravenously At II he received 3 pints of normal saline and 1 pint of 5 per cent glucose intravenously

are a measure of variation of the total circulating blood volume

It is clear that the untreated patients of Group 1 suffered a fairly prolonged diminution of blood volume, while the treated Group 2 recovered the blood volume much more rapidly in spite of the fact that the patients of this group were more ill in the first instance A considerable proportion of the patients in Group 1 and in the more seriously ill Group 3 lost protein in excess of what could have been lost by hæmorrhage as shown by the hæmoglobin percentage variation This must have been due to loss of plasma which has been shown to occur in shock[2,3,8] Another phenomenon of shock—namely, increased concentration of the red cells and hæmoglobin above the preoperative level (see Fig 1)—was present in nearly all the patients who lost protein These cases can reasonably be said to have suffered from shock Adequate treatment with fluids mostly prevented the changes typical of shock

TREATMENT

As preventives of shock, there seems little to choose between fluids per os and fluids per rectum, but excess of salt is objectionable owing to the possibility of causing hydræmia (see Fig 3)

The intravenous route is often disappointing *Samson Wright (1936) states that though oral or rectal* saline may increase the blood volume intravenous saline is not retained in the vessels and is soon lost through the kidneys Further, Maizels and Smith (1934) have shown that since physiological saline is nearly twice as strong in chlorides as blood plasma a strain is thrown on the kidneys to excrete the chlorides while retaining the water, and in this the kidneys may fail with the result that the patient becomes more dehydrated than before On the whole in the present series, alternate physiological saline and 5 per cent glucose in water by the continuous drip method was more successful intravenously than physiological saline alone

The chief objection to intravenous fluid is the risk of pulmonary œdema Dilution of the plasma proteins and therefore reduction of the effective osmotic pressure, occurs first in the pulmonary circulation and if the plasma protein percentage is low to begin with the osmotic pressure may be reduced to such an extent as to allow leakage of fluid from the vessels into the lung Of the 4 cases of pulmonary œdema all had a low protein percentage and in 3 the complication followed intravenous injection of saline

A clue to the greater efficiency of rectal saline compared with intravenous saline is found in the increase of total circulating protein which took place during the administration of rectal saline Fluid absorbed from the rectum must traverse the liver before reaching the general circulation and it seems reasonable to suppose that a certain amount of protein is 'picked up' from the liver thus raising the osmotic pressure of that particular sample of blood to an extent great enough to prevent loss of fluid from it via the capillary endothelium Intravenous fluid has to traverse the systemic capillaries before it can reach the liver and the dilution of the protein may be sufficiently great to allow transudation of the fluid before it can get a chance to reach the liver Hence the greater danger of pulmonary œdema after intravenous saline than after rectal saline

When the need to restore the blood volume is urgent a more rational intravenous fluid is one containing the material protein which is necessary to maintain the osmotic pressure of the blood Such a material is plasma Since urgent cases usually show the increased concentration of the red cells typical of shock and since there is an increasing danger from raised blood viscosity causing stasis, acidæmia, and poisoning of the capillary endothelium, which will in turn bring about further fluid loss and blood concentration, it must surely be exceedingly unwise to give a transfusion of whole blood. Starling (1909) states that if blood is transfused into an animal which has not lost blood, the fluid and a proportion of the protein leave the circulation causing a concentration of red cells Although this will not necessarily occur in a patient with an already depleted blood volume, there cannot fail to be an increase in the number of circulating red cells, and it seems a pity to superimpose a polycythæmia on shock *One can only conclude that the ideal* treatment of an urgent case is plasma transfusion

CASE REPORTS

Three cases are worthy of special description

BURNS LOSS OF PROTEIN

A woman of 27 was admitted with second and third degree burns over back, buttocks, and both legs, rather more than half her body surface being involved. After treatment with tannic acid she was found to have a blood pressure (systolic) of 108 the pulse rate being 124 Capillary and venous hæmoglobins were 114 and 116 per cent respectively and the plasma protein was 6 75 per cent in both Twenty four hours later she was almost pulseless, the blood pressure was 100, and the capillary and venous bloods gave hæmoglobins of 160 and 130 per cent respectively Three pints of a gum saline solution were given slowly into a vein with considerable improvement in the pulse, though the rate remained at 140 An ear puncture flowed freely giving a hæmoglobin of 100 per cent and a plasma protein percentage of only 3 44 Twelve hours later the pulse was weaker, but the capillary hæmoglobin remained at 100 per cent She died four hours later

The findings here are in agreement with the work of Blalock (1931) who showed that whole plasma was lost from the circulation in experimental burns, and of Underhill and his associates (1923) who demonstrated blood concentration in a series of accidental burns Incidentally the hæmoglobin concentrations obtained by these workers are remarkable When it is considered that with a hæmoglobin concentration of 110 per cent the cells occupy about half of the total blood volume, their figures of 200 per cent or over must indicate that the blood consisted only of cells No doubt the blood was obtained from capillaries as a result of considerable squeezing

Inasmuch as these cases of severe burns show great blood concentration from plasma loss, the rational treatment is to use plasma transfusion to replace what is lost Blood transfusion, which supplies more cells to an already concentrated blood, cannot be recommended

INTRAVENOUS INFUSION, PULMONARY ŒDEMA, ? HISTAMINE SHOCK

A boy, aged 8 years was operated on early one morning as an emergency some 5 ft of small intestine which had been strangulated by a fibrous band and had become "gangrenous" being freed and returned to the abdomen under local anæsthesia. He was seen a few hours later when his pulse was of small volume and 140 per minute In contrast to the usual appearance of shock with its greyish pallor he was bright red in the face, with the flushed appearance one might expect from the presence in the circulation of histamine or some vasodilator substance (Knight and Slome 1936)

The effect of treatment on the blood concentration is shown in Fig 5 Except on the first day when venous blood only was used for analysis capillary and venous blood gave the same results Signs of pulmonary œdema were noted two days after the operation and on this day as a result of dilution with intravenous saline the plasma protein was only 5 3 per cent Thereafter recovery was rapid.

This case is of interest because of the very considerable blood concentration which was present without any sign of stasis also because of the good effect of intravenous saline and glucose and the development of pulmonary œdema when the plasma protein had reached a subnormal value

SHOCK WITH RAISED BLOOD ADRENALINE

A laparotomy was done on a man of 73 and, an inoperable carcinoma of the stomach being found, the abdomen was closed. Next day his pulse-rate was 100 with fair volume his tongue was dry his colour normal but the veins of his arms were slightly contracted and would not dilate when a tourniquet was lightly applied above them His capillary and venous hæmoglobin had risen from 79 per cent before operation to 85 per cent while the plasma protein had fallen from 6 13 to 6 per cent Two days after the operation his appearance was remarkably changed. His tongue was dry he was very thirsty in spite of copious drinks his lips were cyanosed and he was slightly breathless The pulse rate was 132 and of poor volume and the blood pressure was 125/85 His face was cold and had a greyish pallor and the capillaries would not empty readily under pressure nor refill when the pressure was released, the blood flowing in them like tar The veins were noted to be much contracted.

Since Freeman (1933) has produced all the phenomena of shock in cats by injection of adrenaline in physiological amounts into their circulation it was decided to perform a blood adrenaline estimation on this patient while he was in his vasoconstricted condition. Using Whitehorn s method (1935) 0·24 ± 0·02 mg of adrenaline was found per litre of blood—a quantity stated to be much in excess of normal. The capillary and venous hæmoglobins were 106 and 90 per cent. and the plasma protein 7 38 per cent An attempt to give intravenous saline failed because the fluid would not pass along the contracted vein. Four days after operation he was slightly better his colour was improved, the pulse-rate was 112 with better volume and the capillaries were not so contracted Capillary and venous hæmoglobins were 96 and 84 per cent and the protein 6 56 per cent

On the following day five days after operation his appearance was completely changed His face was bright red, his pulse was 100 and of good volume the blood pressure was still 125/85 and the capillaries were easily emptied and refilled. The capillary and venous hæmoglobins were each 81 the plasma protein 5 81 per cent and the blood adrenaline nil At 5 A M the following morning the patient died suddenly of a pulmonary embolus.

In this case there was extreme concentration of the blood associated with almost continuous loss of protein from the circulation and greater concentration of the cells in the capillaries than in the veins These changes together with the patient s appearance were typical of traumatic shock The raised blood adrenaline taken in conjunction with the work of Freeman (1933) is significant

Of the factors that may contribute to intravascular thrombosis (Frey 1933) two were definitely present in this case—namely vascular stasis and an increased sedimentation rate already high before operation (20 mm from a column of blood of 100 mm in one hour) and likely to be even higher afterwards (Chauvin Esmenard, and Jaur 1926) And the one condition likely to loosen the clot in an inactive patient was also present later—namely vasodilatation The clot after formation is loosely attached to the vessel wall and this attachment can be severed by the shearing effect of dilatation of the vessel.

Conclusions

1 Patients who have undergone major abdominal operations tend to suffer from anhydræmia, the duration of which depends on the efficiency of the after treatment Improvement in the clinical condition of the patient tends to run parallel with the restoration of the blood volume

2 If left untreated anhydræmia may develop into true shock characterised by concentration of the blood from plasma loss. Even if shock does not appear dehydration may take place and seriously interfere with the patient s comfort and rate of recovery

3 The best method of fluid replacement if the oral route is contra indicated is per rectum preferably by continuous drip The rectal administration of fluids at the rate of over two pints per day shortens the time for blood dilution and for the accompanying improvement in the clinical condition

4 Since no evidence of serious chloride deficiency was found after operation the fluid given per rectum need not contain the chloride excess found in normal saline On the contrary excessive administration of normal saline may even lead to hydræmia

5 Adequate treatment with rectal fluid tends also to prevent the onset of shock as shown by plasma loss and increasing concentration of the red cells in the blood

6 Since pulmonary œdema may result from abnormally low percentage of protein in the plasma and since intravenous fluids tend to lower this percentage the level of the plasma protein should be ascertained before giving fluid intravenously

7 Owing to the danger from protein loss emergency treatment of post-operative shock should preferably consist in intravenous infusion of plasma. Inasmuch as extensive burns lead to much loss of protein the ideal treatment of this condition must be intravenous plasma infusion

8 Blood transfusion for shock and burns is contra indicated in the absence of anæmia or massive hæmorrhage It carries a risk of increasing the already high concentration of the red cells in the blood and so encouraging stasis

I should like to record my thanks to the staff of Queen Mary s Hospital for giving access to their patients, to Dr M Maizels and Dr G R Cameron of University College Hospital for much information and help, to Prof Samson Wright for his valuable criticism, and to Mr W F Floyd of Middlesex Hospital medical school for making the statistical summary of the hæmoglobin results.

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FIBRINOLYSIS FOLLOWING OPERATION

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A small quantity of blood taken immediately after an operation for cholecystectomy led by chance to the observation of a curious phenomenon. It had been allowed to clot in a centrifuge tube and was left overnight at 37° C. in order that the serum might be obtained when retraction was complete. The next morning, however, it was found that the blood was quite fluid and all trace of the clot, which had been perfectly firm the evening before, had disappeared. A few days later my attention was called, by Dr. L. P. Garrod, to a recent paper by S. S. Yudin, in which the Russian practice of transfusing with blood obtained from corpses was described. In this paper stress was laid upon the fact that persons meeting sudden or violent death were particularly useful donors for a very remarkable reason. If, in these cases, the blood was withdrawn soon after death, it was found that, though coagulation soon took place in the ordinary way, the blood returned to the fluid state in the course of an hour or two, the clots having apparently dissolved. Since it showed no further tendency to coagulate, the addition of anticoagulants was not required, and it could be preserved in this state almost indefinitely, being used for transfusion when needed.

In the light of this paper, therefore, the phenomenon first described began to assume a possible significance, particularly since the fibrinolysis observed by the Russians was associated in their minds with the profound shock experienced before death. The question arose as to whether this fibrinolysis occurred, possibly in a lesser degree, in living persons who had suffered accidental trauma, or undergone surgical operation. Though this problem is at present more of academic interest than of clinical importance it was decided to investigate it. The present paper is a report of the admittedly incomplete and elementary experiments with which this investigation has been begun.

EXPERIMENTS

Patients undergoing surgical operation were selected as being the best subjects to begin with, since blood could be obtained immediately before, and immediately after, the trauma and accurate control therefore obtained. The anæsthetic, of course, introduced a variable factor, but by choosing a series of cases which included the use of inhalation, spinal, and local anæsthesia, it was felt that the effects of these could be determined and eliminated.

At first, attempts were made to repeat the original observation. Blood was obtained by venipuncture before and after operation in about 20 cases, and allowed to clot in centrifuge tubes. These tubes were then incubated at 37° C. and the contents examined in twenty-four hours. In 2 cases complete lysis had occurred at the end of this time in the post-operative blood. In one of these the blood was from a woman who had an operation for cholecystectomy; in the other it was from a woman who had a needle removed from her hand under a local anæsthetic.

In a large proportion of the remaining cases the post-operative clots appeared to be more friable than those obtained from the pre-operative blood, though there was no definite evidence of lysis. The method appeared to be unsatisfactory, since the turbidity of the fluid made it impossible to see the state of the clot without interfering with it. It was therefore decided to experiment with recalcified citrated plasma.

Blood was obtained before and after operation as in the previous series, but was immediately citrated by the addition of one tenth of its volume of 3.8 per cent. sodium citrate solution. It was then centrifuged at slow speed for ten minutes by the clock, and the plasma removed by pipette. Of this, 4 c.cm. was recalcified in each case by the addition of 1 c.cm. of 1.18 per cent. calcium chloride solution, and the tubes containing the clots incubated for twenty-four hours at 37° C. as before. In 2 cases out of 22 examined in this way complete lysis occurred during the period of incubation, one being after nephrectomy, and the other after excision of an epithelioma on the back. Both patients were males and both had general nitrous oxide oxygen and ether anæsthesia.

The remaining 20 cases again showed indefinite signs of lysis; in the majority the post-operative clots were more fragile (in some cases actually fragmented), and the serum more turbid than was the case with the pre-operative controls. The results, however, were inconclusive, and a method of measuring the exact degree of lysis after a definite period of incubation was required. Attempts were made to weigh the clots, after washing and drying, and thus determine the extent of lysis, if any. This project proved to be unsuccessful. It was found impossible to free the close textured plasma clots from adsorbed serum proteins to a satisfactory degree, and inconsistent results were obtained. It was an attempt to overcome this difficulty that led to the production of what appears to be a delicate and satisfactory method of demonstrating fibrinolysis.

In order to reduce the adsorption of serum proteins on to the fibrin that was to be weighed, a method commonly used in the estimation of blood fibrinogen was employed. If 1 c.cm. of citrated plasma be added to 1 c.cm. of 1.18 per cent. calcium chloride solution and 28 c.cm. of 0.85 per cent. saline, subsequent coagulation results in the formation of a fine fibrin reticulum throughout the whole volume of the fluid. This web can be wound on to a glass rod, washed in distilled water, and its mass estimated directly by drying and weighing, or from its nitrogen content by the micro-Kjeldahl apparatus.

It was proposed to prepare two such webs from pre-operative, and two from post-operative, blood, one of each of these to be estimated immediately, and the other two after 24 hours' incubation.

Accordingly blood was obtained from a man about to undergo an operation for the cure of an inguinal hernia, under a local anæsthetic. It was at once citrated, and the plasma obtained as before. The fibrin webs were prepared in the way described in two boiling tubes, one of which was incubated. The other was used immediately to estimate the blood fibrinogen, by the gravimetric method. The whole process was then repeated with blood obtained as the patient was leaving the theatre, the technique being rigidly adhered to.

The pre-operative and post-operative blood fibrinogens were found to be 320 and 310 mg. per 100 c.cm. respectively. The pre-operative and post-operative fibrin webs remaining were left until the next morning

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* Assisted by an expenses grant from the Medical Research Council.

at 37 C when it was proposed to estimate their mass in the same way The next morning however it was found that this procedure could not be carried out The pre-operative web was intact giving an equivalent of 310 mg per 100 c.cm, but the post-operative web had completely disappeared leaving a clear fluid Similar results were obtained with two cases of partial thyroidectomy the pre-operative clots remaining intact and the post-operative fibrin dissolving in less than 24 hours

The Effect of Operation on Fibrinolysis

Operation.	Sex	Anaesthetic	Fibrinolysis.	
			Pre-operative.	Post operative.
Laparotomy	F	G O & E.	None in 3 d	Complete in 8 hr
Inguinal hernia	M	Local		24
Total thyroidectomy	F			None in 3 d
Removal of sacral dermoid cyst.	M	G O & F	None in 24 hr	Complete in 20 hr
Lumbar ganglionectomy	F	Evipan +G O E.		24
	F	G O E	None in 3 d	None in 3 d
Drainage of Brodies' abscess.	M.	Evipan +G O E		Complete in 24 hr
Amputation of toe	M	G O E		30
Pyelolithotomy	F			24
Excision on piles	M	Spinal		20
Inguinal hernia.	M	Local		Partial in 3 d
Uretero-lithotomy	F	G O.E	Partial in 4 hr	Complete in 4 hr
Inguinal hernia	M	Local.	None in 24 hr	24
	M		None in 3 d	4
Partial thyroidectomy	F	Local + avertin	None in 24 hr	24 „
	F			8
Inguinal hernia.	M	Local + G & O	None in 3 d	None in 3 d
	M.	Evipan, G & O	None in 24 hr.	Complete in 18 hr
	M.		„	14
Resection of gut.	M	G O.E.	None in 3 d	3
Cholecystectomy.	F			6
Inguinal hernia	M.		„	24
Appendicectomy.	F		None in 24 hr.	24
Nephrectomy	F		None in 3 d	None in 3 d
Removal of sacral dermoid cyst.	M		None in 2 d	None in 2 d
Cholecystectomy	F		*None in 3 d*	*Complete in 4 hr*

G = gas O = oxygen E = ether d = days.

At this stage blood was obtained from 6 normal donors, and fibrin prepared in the same way In these incubation was carried on for longer periods to observe the changes that were likely to occur in normal fibrin under these conditions In one of these there was evidence of some lysis after 48 hours since the web broke up into fragments on gently shaking the tube the other 5 being unaffected by similar treatment These fragments however did not dissolve until two days later By the fifth day one other tube showed the same change but the other 4 were unaffected and when two days later the experiment was discontinued, these were still intact In 4 out of 6 therefore lysis did not occur in seven days in one partial lysis took place in two days and complete lysis in four days and in the remaining one partial lysis had begun by the fifth day but was not complete on the seventh Blood was then obtained from a series of operation cases which are tabulated above In every case blood was obtained within one hour of the operation and usually as the patient was leaving the theatre The pre-operative blood was obtained the day before or before premedication was given in all except 3 cases when it was taken just before the anaesthetic was administered

From the accompanying Table and the 3 cases described previously it will be seen that in 22 cases out of a total of 29 complete lysis of post-operative clots occurred in twenty four hours Of the remaining 7 2 showed increased lysis as compared with the controls and 5 showed none during the period of incubation employed

Experiments were then performed to ascertain if possible the nature of the lysis It appeared to be a physical rather than a chemical change though this has not yet been confirmed The first stage is one of fragmentation of the clot which proceeds until dispersion is complete The fluid remaining is quite clear by ordinary transmitted light but the Tyndall beam is brighter after lysis than before After standing for several days at room temperature the fluid containing lysed fibrin deposits a light precipitate which redisperses on warming or shaking

In 4 cases showing post-operative lysis the following experiment was performed As soon as the fibrin webs had formed they were removed from the fluid washed in two changes of saline and placed in each other's fluid. The results obtained were the same in each experiment and are summarised below —

Tube	Contents.		Lysis in 4 hours
1A	Pre-operative fibrin.	Pre-operative fluid	None
1B	Pre-operative fluid	Post-operative fibrin	Complete
2A	Post-operative fibrin	Post-operative fluid	„
2B	Post-operative fluid	Pre-operative fibrin	None

These results suggest that the lysis therefore is due to some change in the fibrin or some substance adsorbed by it from the serum rather than the presence of a free lysin To differentiate between these alternatives the following experiment was performed Pre-operative and post-operative fibrin washed in saline as before was added to post-operative and pre operative plasma, in a concentration of 1 in 30 in saline, with the addition of a few drops of sodium citrate solution to prevent possible coagulation by any calcium remaining in the fibrin The results were as follows:

Tube	Contents		Lysis in 24 hours
1A	Pre-operative fibrin	Pre-operative plasma	None
1B	Pre-operative plasma	Post-operative fibrin	Complete
2A	Post-operative fibrin	Post-operative plasma	
2B	Post-operative plasma	Pre-operative fibrin	None

These results suggest that the lysis is due to a change integral with the structure of the fibrin itself

In all these experiments of course sterile apparatus and solutions were used and aseptic technique adopted Cultures taken from the contents of tubes after incubation have remained sterile in the cases reported

CONCLUSION

The position therefore is as follows Some change in the fibrin structure occurs as a result of trauma, which under strictly aseptic conditions, results in the dispersion of the fibrin reticulum This change has been observed under the conditions described in 24 out of 29 operation cases, obviously too small a series to be conclusive, but large enough to be suggestive Bacteria do not appear to play a part, since cultures of the fluid containing lysed fibrin are sterile Whether this rapid lysis is merely an acceleration of the normal aseptic lysis, which is regarded by Nolf as the natural sequel to coagulation, remains to be seen Future work will be directed towards the confirmation of its occurrence as described, and to a possible elucidation of its mechanism and significance

My thanks are due to Prof Geoffrey Hadfield and Prof Paterson Ross for their interest and advice, and to those members of the surgical staff of St Bartholomew s Hospital who have given permission for these investigations to be carried out on their cases

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CHEST DEFORMITIES IN ASTHMA

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When asthma is of long standing emphysema is nearly always present The distension is the sequel of a functional rather than an organic disorder of the lung and with abatement of the attacks of asthma the lungs gradually empty themselves and return to their original size With recurrent and protracted attacks, however, the approximation to normal is less complete after each attack, and the chest wall becomes distended and fixed In well established cases the shoulders are lifted and the back is hunched The sternum bulges prominently and may form a typical pigeon breast The chest is rounded in its upper half, there is a deep lateral sulcus, and the base is narrow and contracted The appearance of the chest is that of an inverted flask This deformity is quite different from the "barrel chest" usually associated with genuine hypertrophic emphysema In the barrel chest the upper part of the thorax is not unduly expanded the widening of the chest increases progressively from above downwards, and reaches its maximum at the base Dorsal kyphosis and anterior pigeon deformity are not prominent features

Chest deformities of long standing asthma are easily detected even with the patient fully clothed Not every asthmatic however, presents the same degree of chest deformity and the deformity varies with each type of individual in its time of onset as well as in its rapidity and extent of development The stature of the asthmatic sufferer is an important factor, the thin type showing chest abnormalities more readily than the obese type Moreover, in obese subjects and in women with large breasts deformities of the chest wall are difficult to detect by inspection alone since soft parts may completely mask the deformity In such cases radiological examination of the contour of the chest wall is very helpful The method I use is to outline the contour of the chest wall on an X ray film and to transpose it on a sheet of paper If the radiogram has been taken correctly, the outline of the chest will be clearly visible on the film, the edge of the ribs contrasting quite sharply against the shadow of less density given by soft parts covering the thorax

TABLE I

Ages of 82 Asthmatic Patients showing Chest Deformity

Age	Number of cases	Percentage
1–10 years 10–20 "	12 15 } 27	33
20–40 " 40–60 "	37 18 } 55	67

A radiological study of chest deformities has been made in a series of 128 consecutive and unselected cases of asthma attending the asthma clinic at the Leeds General Infirmary This paper does not deal with the more usual radiological signs of emphysema, such as localised brilliancy of the lung fields, increased density of the hilum shadows, and limitation of movements of the diaphragm From a recent discussion [1] it appears that radiologists now agree that the radiological diagnosis of emphysema must never be based on one sign alone but always on a combination One of the speakers, Dr Kerley, gave a timely warning that the so called increased translucency of the lungs may be due to factors which have nothing to do with the lungs Thus it can be produced by over exposure or over penetration, and it is also seen under normal technical conditions in thin subjects This is a point of some importance, for undue reliance on this very misleading radiological sign probably leads to the diagnosis of emphysema being made more often than is justified

TABLE II

Duration of Illness in 61 Cases showing Chest Deformity

Duration of illness	Number of cases	Percentage
0– 1 year 1– 2 years 2– 5 "	3 7 13 } 23	38
5–10 " 10–over "	21 17 } 38	62

It is somewhat surprising that in the radiological diagnosis of emphysema more attention is not paid to the appearances of the bony framework, for distension of the lungs must inevitably bring about deformity of the chest wall, and the degree of the deformity is therefore a good exponent of the amount of over stretching which has taken place in the lungs

In early cases the most noticeable change is a "ladder " appearance of the contour of the chest Normally the ribs which run obliquely from above downwards and forwards, overlap each other in a regular fashion, and with their outer surface form an even outline of the thoracic wall (Fig 1) As the lungs become over expanded the ribs become raised and approach the horizontal position, normal overlapping does not occur, the outer surfaces of the ribs fail to form an even contour, and the outline of the chest becomes irregular (Figs 2 and 6) This type of chest is often observed in asthmatic children and in adults with a short history of asthma In cases of longer standing a definite rounding of the chest takes place It is most noticeable in the upper part of the chest and affects mainly the six upper ribs one hemithorax may be more affected than the other so that the chest becomes asymmetrical. Often the over expansion is limited to a small area of the thorax and it may be localised to the upper or middle zones The intercostal spaces become wider in the over expanded part of the chest but the widening occurs in a very irregular fashion and not evenly from above downwards as it does in true hypertrophic emphysema. Thus over expansion of the lungs in asthma may select one part of the lung more than another *In cases with gross deformity* the thorax assumes the appearance shown in Figs 3 and 5 The upper part is rounded the ribs are raised and horizontal and the upper chest has a ballooned appearance At the level of the costal attachments of the diaphragm and especially at the level of the 9th and 10th ribs, the chest is drawn in and forms a deep lateral sulcus The lower part is unduly narrow and contracted This type of deformity is quite different from the so-called barrel chest of genuine hypertrophic emphysema in which the thorax becomes progressively wider from above downwards with a large inferior aperture and an obtuse subcostal angle (Figs. 4 and 7) In a barrel chest the outline as seen on a radiogram has the shape of a cone. A barrel chest is quite uncommon in bronchial asthma and was not found in more than 10 per cent. of cases in the present series of 128 cases. When it does occur it usually indicates the presence of true emphysema from chronic bronchitis or a pneumoconiosis

Thoracic deformities are commoner in adults than in children and their incidence increases after the second decade Thus of 82 patients showing such deformities 55 (67 per cent.) were over twenty years of age (Table I) Thoracic deformities occur fairly frequently in asthma and of the present series of 128 cases they were observed in 82 (65 per cent) In 14 there was very marked over-expansion of the chest 48 showed definite changes, while 20 showed *early and slight deformities* The degree of deformity was found to depend mainly on the duration of the illness and the frequency and severity of the attacks of asthma Cases of less than five years standing showed the lowest incidence (Table II) Occasionally however well marked chest deformities have been observed in patients with only a short history of asthma and this suggests the possibility of a hereditary predisposition to their development *Hajós*[2] found 16 per cent of the so called hereditary type of emphysematous thorax among 104 cases of asthma But it must be noted that these patients often have a long history of bronchitis during the anteparoxysmal stage Moreover the low percentage of such cases discredits the suggestion that asthma is the result and not the cause of the distended chest.

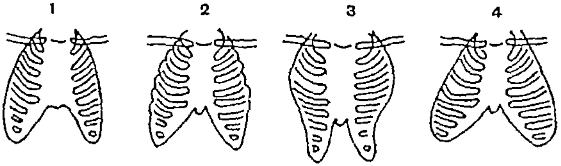

FIG. 1.—Normal contour of the chest.
FIG 2.—" Ladder " appearance of early type of chest deformity in asthma.
FIG 3 —Typical chest deformity in long-standing asthma
FIG 4.—" Barrel chest " of hypertrophic emphysema

SUMMARY

1 The chest deformity resulting from functional emphysema in asthma differs from the barrel chest of true hypertrophic emphysema

2 Early thoracic changes may escape clinical observation but are recognisable radiologically by outlining the contour of the chest on an X ray film

3 In a radiological study of 128 cases of asthma chest deformities were found present in 65 per cent of cases

4 The degree of deformity depends upon the duration of the illness and the frequency and severity of the attacks

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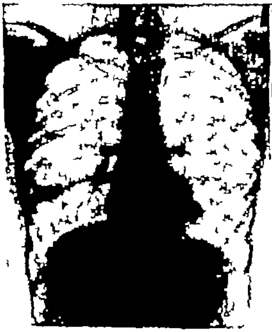

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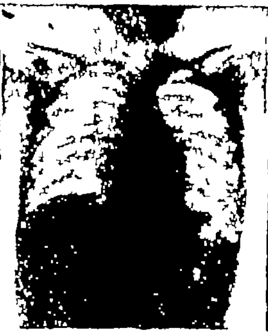

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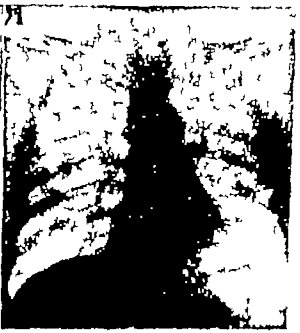

FIG 5 —Long-standing case of asthma showing well marked chest deformity Girl aged 15 Asthma for 10 years
FIG. 6.—Case of asthma showing " ladder " effect.
FIG. 7.—Barrel chest of genuine hypertrophic emphysema.

REMOTE EFFECTS OF PUERPERAL SEPSIS

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It is a widespread belief of the lay and medical public that puerperal sepsis is a uniquely crippling disease, with a train of physical, psychological, and eugenic ills Patients and their doctors appear to expect a long period of invalidism to follow the acute stage of a puerperal infection, and "considerate" behaviour is exacted from husband and relatives to far beyond the necessary or chivalrous measure

In this investigation of the remote ill effects of puerperal infection in 100 women treated in the isolation block of Queen Charlotte's Maternity Hospital, allowance has been made for the descriptions of malaise, neurosis or actual disability to be expected from women of a corresponding economic walk in life, even at ordinary post natal clinics Enough stress is not often laid on the fact that any practitioner observing cases in the first months of the post natal period cannot fail to receive complaints of bodily and mental impairment related to the confinement A woman bearing her child in the first year of married life endures the adjustments of marriage, pregnancy, and delivery in rapid succession She manages her household work until term, she is then tenderly treated in the maternity hospital during the lying in period, relieved of work and anxiety, and accustomed to a new high standard of life for a few weeks, and finally she is discharged to the burden of housekeeping plus the new, heavy, unremitting care of her baby Previously existing economic difficulties are increased by the new addition to the family, nursing is an added strain on the not completely readjusted organism Anxiety bred of unpractised mothercraft, loneliness after the congenial community of the lying-in ward, decreased opportunities to enjoy the common leisure of herself and her young husband because of the incessant needs of the child—all these are factors that must contribute to the want of well being suffered in the 12–18 months after childbearing by any woman of below a certain economic level of society, and all but a very few of my cases were drawn from such a class Adequate discount, therefore has had to be made for the natural reaction, both physical and psychical, from normality, exaggerated in my cases by the longer "holiday" in the isolation block, and the "rich living" that is a most necessary part of the successful treatment of puerperal sepsis

The causes of these disabilities cannot fairly be traced to the puerperal infection, nor is their remedy in the hands of the medical man

PROCEDURE

The scope of the inquiry was limited to a careful survey of the general health since the puerperal infection—noting the possible relation of any serious illness or operation to the original disease—the menstrual history the subsequent obstetrical history, and a general and pelvic examination

The material was derived from the files of the last few months of 1930, the whole of 1931, and the first month of 1932 arranged in Groups 1 to 5, according to the clinical history of the puerperal infection Four years had passed since the time of illness in most cases and in some nearly five years All the cases selected had suffered puerperal infection of more than average severity, their period of treatment in the isolation block had ranged from 4–5 weeks for septic endometritis without complications, to 12–14 weeks and over for peritonitis, cellulitis, or septicæmia, The great majority, as is usual in cases of such severity, had been infected with the hæmolytic streptococcus, which, with other pathogenic organisms, had been demonstrated bacteriologically in the genital tract, and/or the blood, peritoneal exudate, &c, according to the localisation of the lesion

For the purpose of this investigation 208 invitations to attend for examination were sent out, and 100 responses were received I examined all the cases personally

RESULTS

The results may be set out in tabular form as follows —

GROUP 1

Acute Septic Endometritis without Complications

Cases examined	22	Primiparæ	18	Average age 27½ years
		2 paræ	2	
		3 paræ or more	2	
General health good	22			

Serious illnesses (possibly related to puerperal infection)—	
Rheumatoid arthritis	1
Menstrual history—	
Normal	18
Dysmenorrhœa	2
Irregular	1
Menorrhagia	1*
Vaginal discharge—	
Slight, occasional	11
None	9
Continuous since infection	2
Subsequent pregnancies—	
None	20
Full term	1
Miscarriage	1†
General examination—	
Bones and joints rheumatoid arthritis	1
Pelvic examination—	
Nil abnormal	19
Cervicitis	2
Procidentia	1

* Hysterectomy for fibroids 1935

† 8 weeks Uterus emptied for therapeutic reasons unconnected with puerperal fever

GROUP 2

Pelvic Cellulitis with or without Thrombophlebitis Phlegmasia Alba Dolens, &c.

Cases examined	36	Primiparæ	26	Average age 26½ years
		2 paræ	8	
		3 paræ or more	2	
General health good	34			

Serious illnesses (possibly related to puerperal infection)—	
Rheumatoid arthritis	1
Pulmonary tuberculosis	1*
Menstrual history—	
Normal	26
Dysmenorrhœa	9
Irregular	8
Menorrhagia	0
Vaginal discharge—	
Slight, occasional	11
None	20
Continuous since infection	5†
Subsequent pregnancies—	
None	33
Full term	3
Miscarriage	0
General examination—	
Respiratory system abnormalities	1
Bones and joints (arthritis)	1
Pelvic examination—	
Nil abnormal	33
Uterine displacements	1
Residual thickening of ligaments	1†
Cervicitis	2†

* Treated and cured at Papworth

† One gonorrhœal being treated at Royal Free Hospital

GROUP 3

Peritonitis Diffuse 3; *Pelvic (including Tubal Masses)* 11

Cases examined	14	Primiparæ 2 paræ 3 paræ or more	8 3 3	Average age 28½ years
General health good	1[illegible]			
Serious illnesses (possibly related to puerperal infection)—				
Pernicious anæmia			1	
Menstrual history—				
Normal			11	
Dysmenorrhœa			0	
Irregular			2	
Menorrhagia			1	
Vaginal discharge—				
Slight occasional			8	
None			5	
Continuous since infection			1	
Subsequent pregnancies—				
None			14	
General examination—				
Circulatory system abnormalities (mitral incompetence)			1	
Nervous system abnormalities (disseminated sclerosis)			1	
Pelvic examination—				
Nil abnormal			10	
Tubal mass			2	
Cervicitis			1	
Ovarian cyst			1	

Same patient

GROUP 4

Septicæmia Complicating Endometritis Cellulitis &c

Cases examined	19	Primiparæ 2-paræ 3-paræ or more	15 3 1	Average age 27 years
General health good	17			
Serious illnesses (possibly related to puerperal infection)—				
Pulmonary tuberculosis			1	
? Glandular fever			1	
Rheumatic fever			1	
Quinsy			1	
Menstrual history—				
Normal			19	
Dysmenorrhœa			0	
Irregular			0	
Menorrhagia			0	
Vaginal discharge—				
Slight occasional			11	
None			8	
Subsequent pregnancies—				
None			19	
General examination—				
Respiratory system abnormalities (pulmonary tuberculosis)			1	
Circulatory system abnormalities (mitral incompetence)			1	
Pelvic examination—				
Nil abnormal			10	

Treated and cured at Brompton Chest Hospital.

GROUP 5

Acute Septic Endometritis with Complications, Urinary Tract Infection, Pulmonary Infection or Infective Arthritis

Cases examined	9	Primiparæ 2 paræ 3-paræ or more	5 4 0	Average age 26½ years
General health good	8			
impaired	1 (septic arthritis with marked deformity of hands improving slowly with treatment)			
Serious illnesses (possibly related to puerperal infection)			0	
Menstrual history—				
Normal			7	
Dysmenorrhœa			2	
Vaginal discharge—				
Slight occasional			5	
None			1	
Continuous since infection			3	
Subsequent pregnancies—				
None			9	
General examination—				
Bones and joints; septic arthritis			1	
Pelvic examination—				
Nil abnormal			6	
Uterine displacement			1	
fibroid			1	
Procidentia			1	

Certain *extragenital morbid conditions* were uncovered during the investigation

Rheumatoid Arthritis (3 cases) —These patients had well marked lesions All were receiving treatment for the condition at various hospitals and admitted relief All had had hæmolytic streptococcal puerperal infection One with severe deformity of fingers and wrists had developed the arthritis during the course of the puerperal fever The others within two years after discharge from the isolation block.

Rheumatic Heart Disease (2 cases) —Both showed signs of mitral disease with fairly good compensation. One aged 22 had had an attack of rheumatic fever nearly two years after the hæmolytic streptococcal puerperal infection (septicæmia) The other had shown no sign of a cardiac lesion during her period of treatment at the isolation block, but described having had chorea in childhood. The puerperal infection in her case had been an acute endometritis and pyelitis the infecting organism being predominantly *Bacillus coli*

Pulmonary Tuberculosis (2 cases) —Neither had shown signs of lung disease at the isolation block. One developed phthisis in the second, and the other in the third year after discharge Both received sanatorium treatment and are free from active symptoms They had been warned against pregnancy and instructed in correct contraceptive procedure.

Disseminated Sclerosis (1 case) —The history suggests that the disease began in adolescence and is pursuing the expected course

DISCUSSION

It was hoped that this investigation would throw valuable light on the damage and deformity that might be expected as a residue of severe infection of the genital tract It is seen however that the pelvic findings are on the whole negative, and not fairly to be held responsible for the rather wretched and gynæcological aspect of most of the women that I examined.

A notable number of cases in every group showed no gross lesion of the pelvic organs After careful examination per speculum and bimanual, 87 cases had no evidence of tubal masses, uterine displacements cervicitis or vaginitis

Cervicitis was present in 5 cases only and this is remarkable when one considers how often severe pelvic cellulitis accompanies deep tears of the cervix One case was frankly gonorrhœal

Tubal or tubo-ovarian masses were found in 2 cases both in the pelvic peritonitis group In one of the cases during treatment in the isolation block, there had been reason to suspect an antenatal tubal affection It is possible that the distinctly thickened tube now palpable is a relic of that state rather than of the puerperal infection. The other patient complained of backache dysmenorrhœa, and a dragging pain on the side of the tubo-ovarian mass some days before the monthly period Neither had conceived again

Fixed retroversion with no other lesion or symptom was found in 2 cases, one of whom had carried a pregnancy to full term eighteen months before examination Procidentia likewise was present in 2 cases One patient an elderly and multiparous woman had had a child since the puerperal fever and dated the prolapse from this later pregnancy The other a flaccid atonic creature who had had a severe second-degree tear at the delivery of her first and only child, and was repaired six months after discharge from the isolation block, complained of stress incontinence, and had a well marked vesicocele and rectocele

As the investigation proceeded therefore my interest was narrowed upon what was emerging as the most appreciable abnormal residuum of the original puerperal infection in the large majority of the cases examined—namely sterility *Among 100 women during 4–5 years of the active childbearing* *period, there had been only 5 pregnancies and only 4 live births*

Failure to conceive may of course be conditioned by a number of factors other than damage to the reproductive tract by puerperal sepsis, and in view of the largely negative findings under that heading, these other factors were examined under three headings

(a) *Contraceptive measures* were found to be widely but haphazardly employed The methods used to check conception ranged from the complete abstinence of one patient (a woman on the verge of dementia præcox) through quinine pessaries, coitus interruptus, "safe period" intercourse, to obstructive appliances of more or less efficacious type Of the 95 "sterile" women, 26 had used no contraceptive whatever, 9 being anxious to conceive because of the loss or the loneliness of an only child, the remainder were indifferent to the possibility of pregnancy, but on the whole inclined to enjoy the accident of sterility Of the 69 women using contraceptives, only 22 could be described as using their chosen methods with the care or discretion necessary for success The rest relied on measures that in the normal woman largely fail to protect against conception, or used these only now and again

(b) *The interval that may be supposed normally to elapse between pregnancies* was estimated from a 'control" group of 38 multiparous women, of roughly comparable age and social (economic) level, treated in the isolation block during the past five months It was found that the average interval between the first and second child is $2\frac{2}{3}$ years, and between the second and third $3\frac{1}{2}$ years The extremes in the group were 7 years in one case, and 11 months in two

(c) *Subsequent pelvic infection* —One patient acknowledged and showed clinical evidence of a gonorrhœal infection contracted since the puerperal fever She had a chronic cervicitis and bilateral tubal masses

Excluding the cases dealt with in these categories, there remained the large number of women who in the absence of gross pelvic lesions remained infertile for 4–5 years following a severe puerperal infection These were more closely examined

Of the 9 women anxious to achieve pregnancy, 7 fell into Group 3, the "peritonitis (pelvic and diffuse)" group, which thus appears to be the least residually fecund if one excludes Group 4, the septicæmia group of 19 patients who one and all desired no repetition of their childbearing experiences, and appeared to be, with few exceptions, "ladies that have intelligence in love" sufficient to avoid its consequences Fallopian tube involvement is probably most commonly found as the result of peritonitis, and only unusually of extension by direct continuity from an acute septic endometritis It is often impossible to diagnose tubal masses in the acute stage of puerperal infection if they are associated with peritonitis, and, in this investigation, have been classed in the peritonitis group when suspected clinically Probably permanent sterility is most likely to occur in this group although the absence on examination of palpable evidence of tubal damage remains a fact that somewhat disturbs this conclusion And it is only equally plausible to argue that sealing of the uterine end of the tubes in the course of a septic endometritis as apart from the endosalpingitis of a gonorrhœal infection, happens very frequently, and is the cause of sterility in such cases

It is fascinating to speculate on the results of lipiodograms to test the tubal patency of such a series of sterile women and in the absence of such research the causes of the widespread sterility uncovered in my investigation must remain a matter of hypothesis only

SUMMARY

1 Some psychical and physical debility is a common post natal finding in women living at a low economic level

2 Complete restoration to normal health may be expected for the large majority of women recovering from severe puerperal infection

3 Some morbid conditions uncovered during this investigation appear to bear a close relation to the original puerperal infection, notably rheumatoid arthritis and mitral valvular disease

4. This investigation shows that sterility is a prominent sequel to puerperal infection It is not an invariable result, and must be described as dependent to some extent upon extrinsic factors such as subsequent pelvic infections, the "natural" interval between pregnancies, and the wide dissemination of contraceptive knowledge among the population In the absence of any general evidence of gross pelvic damage, it is not possible to relate the sterility to any specific lesion of the genital tract

I wish to acknowledge my indebtedness to Dr Leonard Colebrook who encouraged this investigation, and to the members of the honorary staff of Queen Charlotte's Maternity Hospital who kindly allowed my use of case records, and gave me helpful advice on procedure, deductions, &c

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THE THERAPEUTIC ACTION OF p-AMINOBENZENESULPHONAMIDE IN MENINGOCOCCAL INFECTION OF MICE

By H Proom, B Sc, A I C

(From the Wellcome Physiological Research Laboratories, Beckenham, Kent)

Buttle, Gray, and Stephenson (1936) have reported in this journal that p aminobenzenesulphonamide protects mice against experimentally induced meningococcal septicæmia The degree of protection, and the most suitable method of administering the drug, have now been more fully investigated

TECHNIQUE

Infection of mice—Mice were infected with virulent meningococci according to the method described by Miller (1935) and more fully by Miller and Castles (1936) Strains were kept on a phosphate buffered meat infusion agar medium similar to that described by Miller (1935), they were subcultured daily, and a five to six hour culture was used for infection The culture was removed from the slope with a wire loop, suspended in physiological saline and adjusted to an opacity corresponding to one thousand million organisms per c cm A tenfold dilution was made in 5 per cent mucin suspension, from which further culture dilutions also in mucin suspension were made on a one hundred fold range The mucin used was Granular Mucin (hog's gastric) obtained from the Wilson Laboratories, Chicago other brands were tried and found unsuitable A 5 per cent suspension in distilled water containing 1 per cent glucose was sterilised by steaming and adjusted to pH 7 3 with normal sodium hydroxide and used as the suspending fluid The meningococci were injected intraperitoneally into mice in 1 c cm of mucin suspension the injections being performed within half an hour of the preparation of culture dilutions

Administration of drug—The drug has been given subcutaneously and by the mouth The subcutaneous injections were made with a 2 per cent solution of the drug in distilled water it being necessary to warm to about 40° C in order to effect solution at this concentration A 10 per cent suspension of the drug in distilled water containing approximately 3 per cent gum acacia as a stabilising agent was used for oral administration. Intraperitoneal injection was not used owing to the higher toxicity of the drug when given by this route and intravenous injection was not suitable for amounts greater than 10 mg owing to the low solubility of the drug (2 per cent. at 37 C)

EXPERIMENTAL

Mice infected with a mucin suspension of virulent meningococci die from a meningococcal septicæmia within three (usually two) days the time of death depending upon the number of infecting organisms The appearance of mice dying from meningococcal infections has been described by Miller and Castles (1936) and is similar to that of mice dying from streptococcal or pneumococcal infections no symptoms indicating meningeal involvement being observed

Degree of protection obtained with p-aminobenzene sulphonamide —Table I shows the protection obtained with *p* aminobenzenesulphonamide against varying numbers of meningococci of a virulent Group II strain the drug was given in different amounts by the subcutaneous and oral routes

It will be seen that the drug will protect against a million lethal doses of meningococci when it is given under optimal conditions as in Experiment No 8 In this case 7 out of 10 mice infected with one hundred organisms died and all the treated mice receiving one hundred million organisms survived There is little difference in the degree of protection obtained when the drug is given by the oral or subcutaneous route Protection has never been observed against a dose of one thousand million organisms

The most suitable dose of *p* aminobenzenesulphonamide appears to be 10 mg subcutaneously or 25 mg orally given immediately and repeated five and twenty four hours after the injection of organisms

TABLE I

Showing protection obtained against the same strain with various doses of p-aminobenzenesulphonamide given subcutaneously and orally

Numbers indicate mice surviving one week out of groups of ten mice injected

Treatment.	Treated			Untreated controls				Mucin controls.
	Number of organisms injected—							
	10T	M	100M	100	10T	M	100M	—
(1) 10 mg subcutaneously immediately after injection of organisms	10	10	6	2	2	0	0	10
(2) 10 mg subcutaneously immediately and 5 hours later	10	10	7	2	0	0	0	10
(3) 10 mg subcutaneously immediately and 18 hours after	10	0	7	6	2	0	0	10
(4) 10 mg subcutaneously immediately 6 hours later and on two successive days	10	10	0	8	2	0	0	10
(5) 5 mg immediately and 5 hours later	10	7	2	[illegible]	3	0	0	10
(6) 5 mg orally immediately	10	8	0	3	0	0	0	10
(7) 25 mg orally immediately and 5 hour later	10	10	6	1	0	0	0	10
(8) 25 mg orally immediately 5 hours and 24 hours later	10	0	10	3	0	0	0	10
(9) 50 mg orally immediately and 5 hours later	7	9	6	1	0	0	0	10

10T = 10 000
M = 1 000 000

With larger doses of the drug the combined action of drug and mucin makes the mice very ill, and a few fail to recover Mucin alone has little effect on the mice

Meningococci can be isolated from the blood of all the untreated animals which die but it is seldom possible to isolate meningococci from the blood of moribund treated animals which have received an infecting dose of not more than one hundred million organisms This probably indicates that in the case of the few treated animals which die the course of infection has been checked although their resistance has been so lowered that death ensues even in the absence of septicæmia In isolating meningococci from the blood the technique described by Miller and Castles (1936) has been followed

TABLE II

Showing the protection obtained against the same strain when the first dose of drug was given immediately two five and eighteen hours after the injection of organisms

Numbers in table indicate mice surviving out of groups of ten

Treatment	Treated			Untreated controls				Mucin controls
	Number of organisms injected—							
	10T	M	100M	100	10T	M	100M	—
25 mg orally immediately repeated 5 and 18 hours later	10	0	10	3	0	0	0	10
25 mg orally 2 7 and 20 hours after infecting organisms	10	8	1		1	0	0	10
25 mg orally 5 18 and 23 hours after infecting organisms	7	6	0	0	0	0	0	10
25 mg orally 18, 3, and 30 hours after infecting organisms	1	0	0	1	1	0	0	10

It is not necessary to keep mice under observation for more than a week for late deaths due to meningococcal infection do not occur Treated mice have been kept under observation for a month and remained quite healthy

Effect of giving the drug at various times after the injection of meningococci —A very much lower degree of protection is obtained if the administration of the drug is delayed for a few hours Table II shows the results obtained when the course of injections of the drug was started immediately and two five, and eighteen hours after the injection of organisms.

When the drug was given immediately after the injection of culture almost complete protection was obtained against varying numbers of meningococci up to one hundred million organisms. If the administration of the drug was delayed for two hours no protection was observed against an infecting dose of one hundred million organisms It was observed that blood cultures from these mice which were not protected were positive before the drug was given Good protection was obtained against an infecting dose of ten thousand and a million organisms The blood cultures from these mice were negative before the injection of the drug A much poorer protection was obtained if the giving of the drug was delayed for five hours and by this time the blood culture from most of the mice had become positive A few of the mice having a positive blood culture were protected by the drug No protection was observed if the administration of the drug was delayed for eighteen hours By this time a number of mice were dead or moribund, and the blood cultures from all living mice were positive

Protection against different strains —The protective action of the drug has been tested against six different strains of meningococci , the results have been summarised in Table III It appears that the drug protects equally well against strains belonging to Group I and Group II

TABLE III

Showing protection obtained with six different strains of meningococci All mice received 25 mg orally immediately, five, and eighteen hours after injection of organisms

Numbers in table indicate mice surviving out of groups of ten

Strain	Group	Treated			Untreated controls				Mucin controls
		Number of organisms injected—							
		10T	M	100M	100	10T	M	100M	—
M 393	I	8	10	6	10	2	0	0	10
M 398	II	10	10	6	9	8	3	1	10
M 406	I	10	10	3	7	1	0	0	10
M 407	I	10	10	5	8	6	0	0	10
M 409	II	10	10	6	4	0	0	0	10
M 410	II	10	9	10	3	0	0	0	10

Comparison of the type of protection obtained against streptococcal and meningococcal infection in mice —In view of the fact that the effect of *p* aminobenzene sulphonamide on streptococcal infection in mice has been extensively studied, some comparison of the protection obtained against this organism and against the meningococcus appears desirable Buttle, Gray, and Stephenson (1936) have shown that with streptococcal infection of mice, protection can be obtained against ten thousand lethal doses of a highly virulent strain this protection being independent of the Griffith type of the streptococcus Also, in order to obtain complete protection, the drug must be given daily for fifteen days after the injection of organisms As Levaditi and Vaisman (1935) state that streptococci survive in the spleens of treated mice up to the eighth day after infection it seems probable that this continued administration of the drug is necessary to eliminate these localised organisms and prevent them setting up a generalised septicæmia Nitti and Bovet (1935) have shown that it is not possible to protect against large numbers of organisms of a comparatively avirulent strain of streptococcus

With the meningococcus a slightly higher degree of protection is obtained—namely, under optimal conditions against a million minimal infecting doses of organism It is unnecessary to continue the administration of the drug for several days, possibly because the meningococcus unlike the streptococcus, is incapable of establishing a local focus of infection As with the streptococcus, protection is obtained equally well against organisms of different serological types and it does not appear possible to protect against more than a certain number of organisms, irrespective of the virulence of the strain

DISCUSSION

The foregoing experiments show that the early oral administration of *p* aminobenzenesulphonamide prevents the development of septicæmia and death in mice infected with meningococci. In man the spread of infection from the nasopharynx to the meninges is most probably via the blood stream, the prophylactic use of the sulphonamide in epidemics seems, therefore, worthy of consideration

There is some evidence that *p* aminobenzene sulphonamide administered orally reaches the cerebro-spinal fluid *p* Aminobenzenesulphonamide as shown by Colebrook, Buttle, and O'Meara (1936) inhibits the growth of streptococci in blood and culture medium It has been found that the cerebro spinal fluid taken from rabbits which have received large doses of the drug inhibits the growth of a small inoculum of streptococci whereas a similar number of streptococci grow freely in the normal fluid (To facilitate growth, a little human blood is added in both cases)

In established cases of meningococcal meningitis in man the conditions may not be comparable with those following intraperitoneal injection of culture into mice The results of the mouse experiments, however, together with those obtained with the cerebro spinal fluid in rabbits, suggest a clinical trial of *p* aminobenzenesulphonamide even when meningeal involvement has already occurred

SUMMARY

1 *p* Aminobenzenesulphonamide given immediately after infection protects mice against approximately a million minimal infecting doses of meningococci

2 Protection is equally effective against Group I and Group II meningococci

3 When the administration of the drug is delayed for several hours after the injection of organisms a much lower degree of protection is obtained

My thanks are due to Dr G A H Buttle and Dr H J Parish, under whose guidance this work was carried out

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THE PLASTER BED

BY F P FITZGERALD, M.B Dub , F R C S Irel.
AND
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THE making of plaster beds is such an ordinary part of surgical practice that the description of any method calls for some explanation. This is to be found in the fact that although the technique to be described is not original, and has long been in use at a few hospitals besides the Royal National Orthopædic Hospital, we think that its merits deserve wider appreciation The method is usually attributed to Prof J Waldenström of Stockholm, but in a personal communication from him we learn that while it probably reached England from his clinic, he himself first saw it employed by Calot at Berck sur mer

MATERIALS

1 Plaster muslin, 32 threads to the inch (a material of constant quality may be obtained from the Stanmore Cripples Training College) Ten to twelve doubled sheets

ON WRITING FOR THE LANCET

JUST as the motorist is sometimes a pedestrian so the writer is sometimes a reader For this if no other reason we ask him to look at our Contributors Code whose general observance—though it contains nothing new to some careful drivers—would reduce casualties and free the editorial police for more useful duties

LENGTH

Short papers are more likely to be read and more likely to be published But papers can be long at 500 words and short at 5000 according to their material The secret of brevity is repeated revision the author's best friends are a month's delay and several candid critics

LANGUAGE

Every sentence should be *as simple as possible* apart from technical terms it should be intelligible at a first reading to any educated person The pompous circumlocution often thought appropriate to scientific publications is an enemy to clear thinking and an obstacle to the spread of information among busy practitioners The modern article written in medical jargon instead of English is apt to begin something like this —

> Though numerous instances have been recorded in the United States examination of the literature with reference to idiopathic glandulosis suggests that this disorder is of relatively infrequent occurrence in this country Up to the present time no consensus of opinion exists in connexion with the factors which may play an ætiological rôle in its causation, and in view of their variety taken in conjunction with certain abnormal characteristics involved in their symptomatology it would appear that the following series of cases under the present author's observation may be of sufficient interest to warrant being placed on record.

Given time we might translate it thus —

> Though often reported in the United States, idiopathic glandulosis appears to be less common in this country Its cause is still uncertain and I am recording these cases because the disease is rare and some of the symptoms were unusual.

The stigmata of jargon include over use of words with abstract meanings (*of a blue coloration* rather than *blue*) of the passive voice instead of the active (*it is believed by Smith* instead of *Smith believes*) of long words or constructions usually Latin in origin instead of short ones (*subsequently to* rather than *after*) For an analysis and righteous condemnation of these and similar practices we refer those interested to Lecture V of Quiller Couch's Art of Writing (Cambridge University Press) Meanwhile, though admitting the insecurity of people who live in glass houses we offer examples of overworked or misused words and phrases marking some of the most tiresome with an asterisk and suggesting alternatives

a degree of *some*
*ætiological factor *cause*
as a result : *hence*
a variety of *many various*
*case : *patient child man*
certain : *some*
commence *begin*
consider : *think hold believe*
considerable *much large high*
employ : *use*
exists : *is*
experimental dog *dog*
extensive : *big long*
fifty per cent *half*
following the *after the*
frequent : *common*
*frequently *often*
indicate *show suggest*
indication : *sign*
*individual *person man woman cat*
*in few instances : *seldom*
in large measure *largely*
in regard to : *about*
in the case of : *in*
invariably *always*
majority of *most of*
*marked *much great, big obvious evident*
meticulous : *careful elaborate*
nature *kind sort*
numerous : *many*
*occur *happen appear develop arise*
one-half *half*
pathology : *disease abnormality*
portion *part*
practically *almost*
previous to : *before*
prior to : *before*
prolonged *long*
psychological *mental, emotional*
regarding *about as to*
render *make*
state *say write*
subsequent to : *after*
symptomatology *symptoms*
theory *opinion idea*
to some extent *somewhat*
would appear *seem appear*

Such favourites as *etc literature, phenomenon respectively stressed* and *tendency* can often be omitted with advantage. And even scientific caution should have bounds : *apparently* is as good as *I cannot disguise from myself that it would appear that*

We are sometimes asked in accepting an article to add where necessary a few journalistic touches But nowadays it is the layman not the journalist who writes journalese Leading articles in the popular press are usually models of straightforward English

MODESTY

The first person singular—the naked *I*—is no longer thought immodest Elaborate garments such as *we* and *the author* do not disguise a writer's identity unless they also disguise his meaning and medicine has no need of such aids to ambiguity Not only the author's name should be given at the head of the paper but also his decorations, his degrees and their source and relevant diplomas A statement of one *or more appointments is preferable in a general* medical journal to the vague formula From the ——— Institute

ANONYMITY OF PATIENTS

The patients identity on the other hand must always be hidden If in distinguishing between several of them it is convenient to use initials, the conventional *A B* or X Y may be used No recognisable portrait will be reproduced without written permission from the patient or his friends

PRESENTATION OF MS

Papers should be submitted in typescript if possible but carbon copies are disliked by all editors and single spacing should not be used except for quotations (Really accurate reproduction of quoted passages is rarely achieved but is undoubtedly desirable) Paragraphs that may suitably go into small print should be marked with a vertical line in the margin these will usually include —

1 Case notes (which may be written tersely)
2. Descriptions of technical methods ;
3. Parts of the paper that can be skipped by the ordinary reader because they are not essential to the argument
4 Lists that require the greater prominence given by separate paragraphing (Nos 1–4 here are an example)

But the use of numbered lists reminiscent of examination answers can certainly be overdone Shakespeare if a surgeon would probably have written

(1) To be or (2) not to be that is the question
Whether tis nobler (3) in the mind to suffer

Information about headings, and form in general, is best gained by studying papers already published. Two kinds of cross heading are used in THE LANCET—the "lower case bold" and the "small caps"—but the former is ordinarily avoided except in long articles. Side headings, unless they are headings for cases (e.g., CASE 3) are in italics, and may take one of two forms:—

Further History.—The patient went from bad to worse.
The *further history* was disappointing.

Long sections in small type can be divided by small type cross-headings.

ITALICS

The significance of italic headings is lessened by lavish use of italics for other purposes. Subsidiary italic headings inside a paragraph are therefore inconvenient, and words like "post mortem" and "in vitro" have now become English and need no longer be treated as foreign bodies. The same applies to the everyday names of animals and vegetables, in Latin or English. In THE LANCET neither capitals nor italics are adopted in:

The felidæ, and other mammalian genera, are susceptible alike to ascaris and staphylococcus.

Nor is it thought wise to apply italics to semi-slang, like *B. Pfeiffer* which can equally well be rendered as "Pfeiffer's bacillus." But (whatever the particular classification) the proper scientific names, which give both genus and species, are always italicised, with an initial capital for the genus only and a distinguishing name added where necessary:—

Bacillus welchii, *Bacterium dysenteriæ* Flexner, *Brucella abortus* Bang, *B. paratyphosus* B.

When the generic name is first mentioned it should be spelt out (*Bacillus tuberculosis*), but afterwards the contraction *B. tuberculosis* will serve.

TABLES AND ILLUSTRATIONS

Tables, which will always be printed in smaller type, should be numbered in roman numerals and put on sheets separate from the text. The printer cannot always place them exactly where the author intends, and hence one must say "the results are given in Table VI" rather than "the results were as follows." An exception may be made for very short Tables and those that can be split without harm if they happen to start near the bottom of a column. Illustrations, too, should be kept separate from the text, being numbered consecutively in arabic numerals (Fig. 1, Fig. 2, &c.), whether they are charts, photographs, or drawings. Each Figure should have a reference in the text, and preferably a descriptive legend to be printed underneath. Since the lettering of charts and drawings often proves unsatisfactory when the illustration is reduced in making the block, the Editor is prepared to arrange for completion of illustrations whose lettering is done in pencil. When graph paper is used for charts the ruling should not be brown, red, or green, which come out black. The magnification of microscopical illustrations ought to be stated (e.g., × 150).

SUMMARIES

Conclusions and summary may often be combined. They are helpful to all but very short papers and should be carefully constructed because many readers abroad (and some at home) will look at nothing else. Here are examples of the descriptive summary (A) which is almost useless, and the informative summary (B), which will be reproduced or translated all over the world:—

A. A series of cases of food poisoning is reported and their causation discussed.

B. Fifteen people fell ill with vomiting an hour after eating lizard soup. Skin tests showed that they were hypersensitive to lizard.

ABBREVIATIONS AND "LANCET" STYLE

Contracted forms like *T.B.*, *C.S.F.*, *R.B.C.*, *B.M.R.*, *M.L.D.* must be either eschewed or explained when first used. *Grains* and *grammes* should be spelt out in full where there is any conceivable chance of confusion; otherwise THE LANCET convention is *gr. 2* for two grains and *2.0 g.* for two grammes. Other abbreviations are:—

cm.	kg. (not kilo)	ml.
c.mm.	kv.	oz. (not ozs.)
c.cm. (not cc.)	lb. (not lbs.)	*p*H
ft.	µ	sp. g.
in. (not ins.)	mg. (not mgm.)	sq.

Dates.—Nov. 10th (not 10 Nov. or 10.xi.36). 1933–35, not 1933–5.

Numbers.—Should numerals or words be used? The best rule is that comparable numbers should be in the same form, and the two styles can sometimes be contrasted usefully—e.g., "No less than 4 of the 42 patients were under fourteen years of age." But a numeral must never begin a sentence. Nor can decimal points be left in the air: *0.5* is correct, not *.5*.

Every journal has sundry preferences or prejudices. Ours include:

Graves's disease, not Graves' or the commoner Grave's. Mg. per 100 c.cm., not mg. per cent. Per cent. not % (except in Tables). Aged, not aet. A radiogram and to radiograph, not an X ray or to X ray. Post mortem (adverb), post-mortem (adjective or, loosely, noun).

REFERENCES

Lists of references are not required merely as evidence or erudition. If given they must be above suspicion: to take over a reference from someone else without verification or acknowledgment is a crime. Each reference, moreover, should give the author's name and initials, the year of publication, the name of the journal cited (contracted henceforth according to the current edition of the "World List of Scientific Periodicals"), the volume (underlined), and the number of the first page of the paper. For books the place of publication is stated but not the publisher's name. References are now made by giving in the text the name of the author and the date of publication, thus—

This is disputed (Jones 1936) but

Wrong headed as ever, Jones (1934) maintains

If Jones has written more than one paper in the year they should be distinguished as *a*, *b*, &c., and space can be saved by saying *and others* when teams of workers are quoted repeatedly.

The work of Jones (1935a) was soon dismissed (Wong, Fairbanks, Hepburn, and Loy 1936, Hulbert 1936b) and it was found that rhubarb is useless (Wong and others 1937).

The list of authors quoted is now put at the end of the article in alphabetical order; but if need be the items can be numbered so that the writer may say "it has been shown[12, 14, 26, 53] that cows eat grass" without interrupting the text with a dozen names of little immediate interest. The following examples show the use of short rules to represent names that are repeated, and of *Ibid* to represent the book or journal mentioned in the previous line. (*Loc. cit.* and *op. cit.* are not acceptable.)

Brown, A., and Smith, B. (1939a) *J. med. Conchol.* 34, 3000.
— — (1939b) *Ibid*, 35, 1608.
— — and Dogsbody, D. (1940) Epidemiology for Oysters, London, p. 9.
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The "World List" is published by the Oxford University Press at £3 3s. Contributors who have no access to it and cannot find the abbrevi n they want in the following selection are asked t ive the full names of journals quoted and mark th in the margin with a pencil cross

NAME	ABBRI IATION
Acta chirurgica Scandinavica	*ir scand*
Acta dermatologica (Kyoto)	*n Kyoto*
Acta dermato venereologica	*Acta derm Stockh*
Acta medica Scandinavica	*d scand*
Acta obst et gyn Scandinavica	*Acta rc scand*
Acta ophthalmologica (Copenhagen)	*ul Kbh*
Acta pædiatrica (Stockholm) :	*Stockh*
Acta psychiatrica et neurologica	*iat Kbh*
Acta radiologica (Stockholm)	*Stockh*
Acta rheumatologica (Amsterdam) :	*m Amst*
American Heart Journal	*Heart J*
American Journal of Anatomy	*J Anat*
American Journal of Cancer	*J Cancer*
Amer Journal of Clinical Pathology	*lin Path*
Amer Jour of Diseases of Children	*Dis Child*
American Journal of Hygiene	*J Hyg*
Amer Journal of the Medical Sciences	*med Sci*
Amer Jour of Obst and Gynecol.	*Amer Gynec*
American Journal of Ophthalmology	*J Ophthal*
American Journal of Pathology :	*J Path*
American Journal of Physiology :	*J Physiol*
American Journal of Psychiatry	*Psychiat*
American Journal of Public Health :	*Amer publ Hlth*
American Journal of Roentgenology :	*Amer Roentgenol*
American Journal of Surgery	*Amer J Surg*
American Journal of Syphilis &c	*J Syph*
Amer Journal of Tropical Medicine :	*Amer trop Med*
American Medicine	*Amer Med*
American Review of Tuberculosis	*Amer Rev Tuberc*
Anatomical Record	*Anat Rec*
Anesthesia and Analgesia	*Anesth & Analges*
Annales de derm et de syph	*Ann Derm Syph Paris*
Annales d hygiène publique &c.	*Ann Hyg publ Paris*
Annales de l Institut Pasteur	*Ann Inst Pasteur*
Annales de médecine :	*Ann Méd*
Annales d oto-laryngologie :	*Oto-laryng*
Annals of Internal Medicine	*Ann intern Med*
Annals of Medical History	*Ann med Hist*
Annals of Otology &c :	*Ann Otol St Louis*
Annals of Surgery :	*Ann Surg*
Annals of Trop Med and Parasit	*Ann trop Med Parasit*
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of this are cut beforehand to the patient s measurements—i e for a bed, the patient is measured from the nasion over the vertex to halfway down the calf for an anterior shell from the nasion to halfway down the calf In either case the width is the distance between the tips of the elbows when the arms are abducted to 90°

2 Plaster-of Paris, 10 lb (Torrey s superfine Italian)

3 A basin holding 12 pints of water at 120° F and an iron spoon for mixing

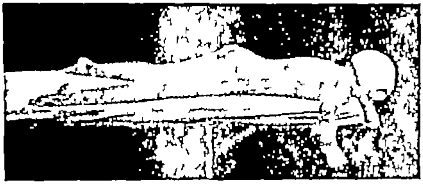

FIG. 1.—Position for plaster bed

4 A table of suitable height covered by a rubber mattress

5 Vaseline 2 in open wove bandages and cotton wool.

6 An adjustable theatre stool and sandbags

7 Scalpels for outlining and knives (linoleum knives with concave blades and wooden handles) for cutting out the cast.

PREPARATION OF THE PATIENT

For a plaster bed the patient lies prone on the table, with the chin resting on the edge arms abducted to 45 and each leg abducted *to 15 (Fig 1).*

For an anterior shell the patient lies on his back with legs and arms arranged as for a bed. The neck is allowed to hyper extend over the edge of the table until the under surface of the chin is horizontal (Fig 2) The head is supported in this position by a sandbag resting on the adjustable stool, and the face is covered with a sheet of gauze. A capeline bandage, or a rubber cap completely covers the hair and in the case of a plaster bed pads of wool over the ears are included to make the finished headpiece more roomy A very thin layer of vaseline is smeared over the skin down to the middle of the calf and a minimum of wool used to cover the pubic and perineal regions.

PROCEDURE

A team of five, *familiar* with their parts, is the ideal, but the number may be reduced to three. The first assistant makes the plaster cream by adding the 10 lb of plaster powder to the 12 pints of hot water and then whipping the mixture to an even consistency with the spoon. The second assistant hands successive double sheets by their folded ends to the first assistant, who dips them thus into the cream. The sheets now like ropes, are lightly stripped of excess cream and are handed quickly and *still* by the folded ends to the other three assistants who are disposed about the table as follows the third stands at the head of the patient, the fourth and fifth on either side of him near the knees The three open out the sheet pull it taut to remove creases (Fig. 2) let *it fall squarely on to the patient* and then smoothe away air bubbles from the midline outwards The fourth and fifth assistants as each sheet is laid press it firmly down to the table between the thighs and perineum so forming a flat bridge connecting the gutters *for the legs The excess muslin* —except in the first and last sheets which determine the internal and external finish of the cast—is folded back at the level of the knees on to the thighs At the sides the sheets must not be moulded under the *patient as this would cause* difficulty in removing the cast. For children it is unnecessary to strengthen the sides by folding back the excess but for adults every second sheet should be so treated

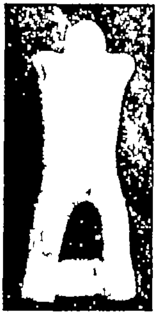

FIG. 4.—Finished anterior shell before mounting

If a bed is being made the *third assistant standing at the* head folds back the excess of the eight to ten intermediate sheets at the vertex and in front of the ears moulding it accurately to the back and sides of the neck. If a shell is being made the intermediate layers are folded back along the symphysis and rami of the mandible, and moulded back along the front of the neck to form a strong horizontal *chin piece The assistants then wash their hands* free of crumbs of plaster and produce a good finish by firmly smoothing the cast from the centre outwards to eliminate air bubbles.

Speed is essential for a good result as the warm plaster cream sets very quickly The procession of sheets must follow without break and all must have been laid within at the most five minutes The *cast is now allowed to set (Fig. 3) until it gives a*

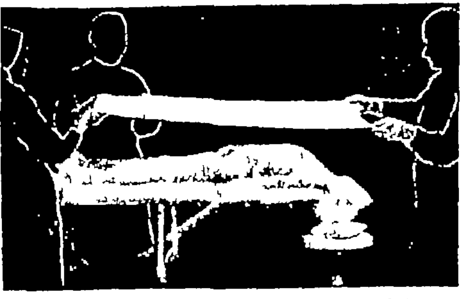

FIG. 2.—Position for anterior shell laying on the first sheet

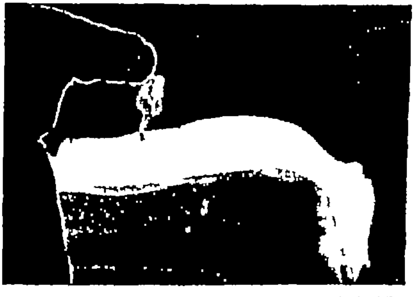

FIG. 3.—Outlining the nursing area of an anterior shell while the cast is setting

high pitched note on tapping While this is happening, the outlines are marked with a sharp scalpel, the sides an inch from the table level, the shoulders in line with the sides, and the upper and lower edges at the level of the folding back An area for nursing purposes is outlined (Fig 3), extending in a bed from the top of the natal cleft, or in an anterior shell from an inch above the pubic crest (Fig 4) to midway between the perineum and the knee on either side, exposing one third of each thigh In a bed, care is taken to make the opening a pointed arch so that the buttocks are adequately supported. When the cast has set, it is eased off all round by insinuating a hand between it and the table, and is then taken to another table where the outlines already marked are quickly cut through with the knives described. It is then tried on the patient (Fig 5) and any necessary trimming carried out From start to finish the whole proceeding should take not more than fifteen minutes The cast is dried for two days in a heated room When thoroughly dry, it is mounted by a carpenter on three shaped transverse supports of 1 in timber, high enough to allow the easy insertion of a bed pan These uprights are affixed by countersunk screws at the neck, lumbar region, and above the knees, and joined by two lateral 3 in strips of three ply wood giving a considerable area for contact with the mattress (Figs 6 and 7) A loose lining is made of linen sheeting and thin blanket sewn together along the edges, having an area cut out to correspond to the nursing area of the plaster cast, and held in position by tapes

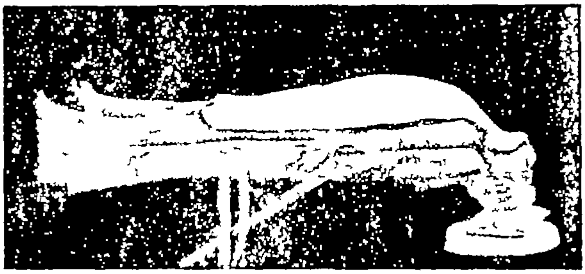

FIG 5 —Trying on an anterior shell after trimming

FIG 6 —Method of mounting

MODIFICATIONS

The bed and shell described are the standard types in use at Stanmore, but many modifications are possible

1 In cases of spinal disease when the lesion is below Th 6 the headpiece may be omitted from a bed , in high lesions the head is always included

2 In active children movements may be restrained by means of a wooden crosspiece shaped to the chin and bolted to two uprights (see Fig 8)

3 When a kyphosis exists at the scapular level, a quadrilateral area may be cut out of the plaster bed and local pressure applied by a split Sorbo pad mounted on a wooden tower This is pushed through the cut out area to rest against the spine above, and supported by a cross board on the firm mattress below

4 A sharp kyphos can be protected by pads of Sorbo glued to the inside of the bed

5 For adults, anterior shells may be made without chin pieces, but children find these comfortable, especially for reading

6 For cases with profusely discharging abscesses, areas should be cut out to allow free postural drainage

7 For thin patients, particularly when paraplegic, areas may be cut out to expose the anterior superior spines and iliac crests

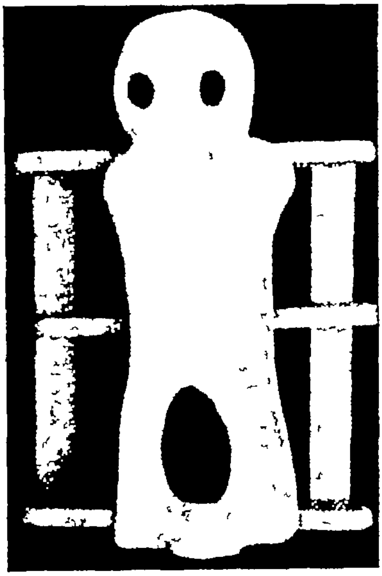

FIG 7 —A plaster bed from above showing supports (wider than usual) and ventilation holes in the headpiece.

8 For ease in transport, the three ply laths may be replaced by longer two by two inch timber with the ends fashioned as handles

9 Turning cases for use with plaster beds may be made as for a very shallow anterior shell without chin piece or bridge

INDICATIONS FOR USE

PLASTER BEDS

1 Tuberculous spines in adults

2 All cases with paraplegia

3 Abdominal paralysis in anterior poliomyelitis

4 Some cases of fracture of the spine—e g , complicated by paraplegia

5 Tumours of the vertebræ

6 Post operative nursing of cases of spinal fusion

7 Transport of medical and surgical cases requiring immobilisation in recumbency

ANTERIOR SHELLS

1 *In the intermediate stage of treatment of tuberculous* spines in children after hyperextension on Bradford frames, to allow collapse of vertebræ and development of compensatory curves

2 *For cases of paraplegia*

3 Post-operative treatment of laminectomy

4 For the nursing of incontinent cases, such as spina bifida when the cast may be waterproofed with varnish or Pexuloid

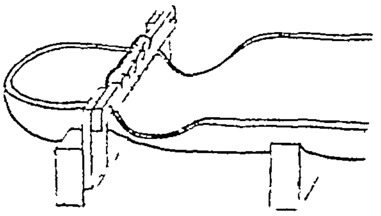

FIG 8.—The restrainer attached to a plaster bed

CONCLUSION

Plaster beds and shells made by this method have the following practical advantages (1) they are made in 10–15 mins , (2) they dispense with the need for preparing many plaster bandages (3) they are of even texture and good finish (4) they are light—a bed for an average adult weighs 5½ lb , unmounted , (5) the mounting facilitates nursing and transport, and with the accurate moulding obtained the adult patient needs to be turned only once a month and pressure sores occur very rarely (7) they are durable—a bed generally lasts twelve months.

Our thanks are due to the medical committee of the Royal National Orthopædic Hospital for permission to publish this account to Miss Williams matron at Stanmore for many helpful suggestions; to Dr C W Durward, for his pains with the photography; and especially to Mr H. J Seddon for his excellent teaching and his invaluable aid in the production of this paper

RAPID AMBULATORY TREATMENT OF SCABIES WITH A BENZYL BENZOATE LOTION

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It is very important that the treatment of a disease such as scabies in the first place should be ambulatory and inexpensive and secondly it should not irritate the often already scratched skin of the patient It seems usual in France and America to regard scabies as a disease necessitating a stay in hospital, if one can judge from the descriptions given in dermatological journals MacKenna (1933) appears to calculate that 5–8 days are required for a cure and he regards treatment by Mitigal as being the simplest and states that it will cure an average case of scabies in 10 days Roxburgh (1936) recommends the treatment of scabies by Kathiolan which is said to produce a cure in 24 hours or by sulphur ointment which takes three days

In the skin department of the Kommunehospital we *treat between 2000 and 2500 cases* of scabies in a year by a method that can be carried out in one hour Formerly we used the kathiolan of Ehlers Marcussen a method of treatment which saved the patient many days stay in hospital and gave very good results This treatment however as with all sulphur remedies often caused an extremely disagreeable sulphur dermatitis In 1932 therefore I introduced treatment by benzyl benzoate It was first tried some 25 years ago by Ludvig Nielsen with great success With the help of the hospital dispenser we improved the formula of the benzyl benzoate lotion and simplified the method of treatment so that it could be carried out in 45 minutes without causing any damage to the skin Since January 1933 we have not used any other method and we have treated some 8000 cases of scabies in which it has proved practically ideal

The whole treatment takes less than one hour and is an ambulatory one only children of under one year having to be treated in hospital It very seldom gives rise to any dermatitis or irritation of the skin and even cases of scabies pyogenically infected, and very young children can be treated without any serious after-effects It is an inexpensive treatment costing about 6d per head for the clinic patient and 2s per head for private patients

METHOD

The formula consists of equal parts of :—

Soft soap (B P 1932)
Isopropyl alcohol
(CH) CHOH
Benzyl benzoate
C H COOCH C H

The quantity necessary for each patient is about 150 grammes The patient anoints the whole body with soft soap rubbed with special care into those parts commonly attacked by the acarus He then soaks in a warm bath at 100 F for 10 mins rubbing himself during the bath While wet the body is brushed all over with the lotion for 5 mins using a brush of Russian pig bristle special attention being paid to the affected parts The patient then rests allowing the body to dry and then continues the brushing for a further 5 mins after which the body is gently dried with a towel and the patient resumes the clothes worn before the treatment was started. Twenty four hours later a second bath is taken and clean clothes put on Underclothes are not disinfected but only washed and if possible boiled Bedclothes should be boiled or otherwise sterilised It is very important that all members of a family or household should be treated on the same day even though they may not show any signs of scabies

We have treated some 8000 cases of scabies in this way and it has proved to be an ideal, effective and cheap method giving rise to no serious post therapeutic dermatitis

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MENTAL CHANGES IN FAMILIES AFFECTED BY DYSTROPHIA MYOTONICA

By Otto Maas, M.D

AND

A S Paterson, M.A Oxon M.D
F R C P Edin M R C.P Lond

(*From the National Hospital Queen square London*)

This paper is a preliminary report of an investigation into the mental symptoms occurring in patients with definite signs of dystrophia myotonica and in members of their families. Chiefly through the courtesy of the honorary physicians to the National Hospital Queen square, and particularly Dr F Arnold Carmichael, Director of Research we have been able to examine 20 such persons On the result of the neurological examination (O M) they were divided into three groups: (1) those who were seriously affected by the disease to the extent of being incapacitated either by paralysis or by cataract; (2) those who showed definite signs of the disease such as wasting of the hand muscles together with the characteristic myotonic reaction in these muscles and (3) relatives who were wholly or almost free from physical signs In each case as thorough a psychiatric examination as possible was made (A S P)

THE FINDINGS

Innate Intelligence of Patients—Of the 20 patients 4 adults were congenital mental defectives their mental ages being nine seven six and six In addition 7 had been backward at school they had not been sufficiently defective to be sent to a special school but were about two years behind other children The remaining 18 appeared to have school records that were average or above average

Intellectual Deterioration—An attempt was made to determine whether any patients normal at birth had later deteriorated intellectually because of the disease Of the 7 backward patients only 2 a woman aged sixty and a man aged fifty-six showed signs of much mental deterioration since school days this deterioration was mainly in their memory Of the 18 who at school had shown intelligence which was average or above average, 14 were over twenty, and 7 of these showed distinct deterioration when tested for recent memory, capacity for doing simple calculations, immediate recall, and grasp of a simple story

Muscle Wasting in Relation to Mental Changes—In our first group which included all those with severe affection of the muscles, 3 were congenital mental defectives, 6 were backward at school, and 3 more although they had been normal at school, had later deteriorated in respect of memory, &c Thus among the 13 severely affected physically there was only 1 whose intellectual deterioration was doubtful, and the group included 3 patients, with hysteric, paranoid, and epileptoid symptoms Of the second group—those with slight muscular wasting—3 had deteriorated in intelligence, and 3 showed other mental changes (2 were chronically elated and 1 had schizoid symptoms) Thus 6 were affected mentally and 6 were unaffected Of the third group—those with no definite muscular changes—3 were affected as regards intelligence (1 was a congenital mental defective, 1 was backward, and 1 deteriorated in later life) The other 4 were unaffected mentally

It may be concluded then that mental changes are almost always present where there is much muscular wasting Where the muscular changes are less pronounced, there may or may not be pronounced mental change

Temperament—A characteristic temperament was apparent in nearly all the cases, whether there was mental deterioration or not The patients were persistently and almost morbidly cheerful, and usually somewhat condescending This state of mind was seen in cases with little or no intellectual change, and the trait was exaggerated in two of them into a state resembling chronic hypomania None of the patients examined were described by relatives as irritable or quick tempered, except 3 of the 4 mental defectives , and even they were on the whole quiet and well behaved

Reaction Types—Despite a certain similarity of temperament in all these patients, there were some whose symptoms recalled those of the classical reaction types

1 *Schizoid Type*—A man aged 22, with mild muscular changes Two years previously he had begun to lose interest in things and became seclusive He was conscious of muscular weakness, and he had been impotent since the age of 16 He was unemployable, for he was casual, slow, and inefficient There was no trend and no voices There was good rapport, and he was persistently cheerful and happy

2 *Paranoid Type*—Man aged 50, with gross muscle changes After 16 years of married life he left his wife in the belief that she was a prostitute, which was untrue He still tried to keep on friendly terms with his wife after taking up with another woman He was an able man and head clerk in an insurance company

3 *Epileptoid Type*—Man aged 54 with gross muscle changes After marriage at 28 he began to have atypical fits when his head would suddenly fall forward and he would remain motionless for a minute or two with his tongue out He had a cheerful disposition and was somewhat demented.

4 *Hypomanic Type*—There were two of these One was a woman of 65 who was severely affected in her muscles She had lost her sight in an accident when 22 She was persistently mildly elated and was called "Sunshine She always believed her sight would be restored She called the doctors "My Lords and said she would give them 20 guineas for some small errand.

5 *Hysteroid Type*—A man aged 35, showing severe muscle changes He was backward at school and later did odd jobs He was popular at spiritualistic séances where he "saw the words written up," and also "astral bodies" He thus enjoyed the limelight and his belief in his own supernatural powers

DISCUSSION

Poor intelligence has often been described in dystrophia myotonica (Adie and Greenfield 1923, Bramwell and Addis 1913, Curschmann 1925, Baake and Voss 1917, Naegeli 1917, Hauptmann 1919) Certain writers (e g , Hauptmann) have held that it is something accidental, and not germane to the disease, and it has been said that the intelligence is not much below what one would expect in the low social stratum to which the patients belong From our observations, however, it appears that where a patient has severe muscular wasting his mind is almost always affected also, which suggests that the mental changes are really part of the disease Where there is less muscular wasting it is less likely that the patient's mind will be affected As the present series included, for example, a chartered accountant and a scientific photographer among those with intellectual deterioration, this cannot be attributed to the disease occurring in people belonging to the lowest social stratum The persistent cheerfulness shown was all the more striking in view of the pitiable physical state and dreary surroundings in which most of them lived

Curschmann (1925) and others have said that serious mental disorder is not characteristic of the disease, and the only case we can find on record is that of Fischer (1920) Among our 29, however, there were 4 patients suffering from serious congenital mental defect, another was diagnosed in a mental hospital as a case of schizophrenia, and we considered that another 6 might have been brought to a physician for an opinion on their mental state As already stated, 6 patients had symptoms approximating to those of the classical reaction types , but the clinical picture was never quite typical—probably because the reaction to difficult circumstances was occurring in persons with a particular temperament

Dystrophia myotonica is undoubtedly a disease entity, dependent on a defect which is inherited, and degeneration of certain endocrine glands has been recorded It is therefore of particular interest to know whether the temperament found in the disease is at all constant, and whether those who show mental changes have any symptoms in common If this were so, it might be possible in time to correlate the mental with particular physical changes

SUMMARY

1 Twenty nine persons from families affected by dystrophia myotonica were subjected to psychiatric examination, and seventeen of them were found to be of low intelligence In eleven of these the intellectual defect was congenital, four adults being mental defectives with mental ages of 9, 7, 6, and 6, while seven had been backward at school. The remaining six had been normal at school but had since deteriorated

2 Where there is much muscular wasting, there are almost always mental changes Where muscular wasting is slight or absent there may or may not be gross mental changes

3 Six of the twenty nine presented clinical pictures in some respects resembling classical syndromes of mental disorder One was diagnosed in a mental

hospital as a case of schizophrenia one had delusions that his wife was immoral one had fits and became somewhat demented one was a hysteric and a spiritualistic medium and two were chronically elated

4 The series was not confined to those in the lowest stratum of the social scale but included several brain workers The intellectual enfeeblement was therefore not merely due to unfavourable environment in early life.

5 A definite temperament was found in so many cases as to seem characteristic of the disease. It consisted in persistent and almost morbid cheerfulness mild grandiosity and a lack of drive and initiative.

Permission to see cases has been granted us by the honorary physicians to the National Hospital, Queen square Mr Charles Goulden Mr T C Summers Dr Redvers Ironside and Group Captain H E Burton R.A.F *to whom we would like to express our thanks* One of us (O M) is indebted to the Medical Research Council for a grant which made this work possible The necessity for the investigation of mental changes became noticeable in the course of his studies in the heredity of the disease

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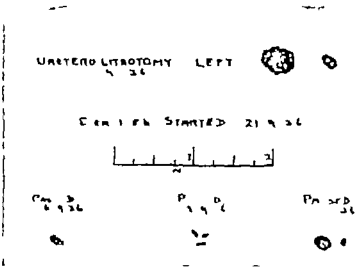
POSTURE AND DIURESIS IN THE TREATMENT OF RENAL CALCULI

By R Ogier Ward M.Ch Oxon F R C S Eng.
ASSISTANT SURGEON TO ST PETER'S HOSPITAL, LONDON

It is common practice to advise patients who suffer from renal calculi to drink large amounts of water partly in the hope that salts which might be deposited as crystals will thereby be held in solution, and partly to ensure the thorough washing out of the urinary tract. Such treatment may be used either to prevent the formation of renal calculi or after a stone has been removed by a surgical operation to prevent the formation of another It has been pointed out by Swift Joly that in the erect posture each lower renal calyx is undrained by gravity and although it is unlikely that in health absolute stasis ever exists from this cause yet it is a fact that renal calculi most commonly take origin in this site, and from small beginnings grow until they fill the lower calyx and then hook over the lower part of the kidney into the uretero pelvic juncture It seems clear that if this part of the urinary tract did not have to empty itself uphill renal calculi would not develop so commonly as the minute deposits of crystals from which they take origin would be washed out when they were still so small that they would readily pass down the ureter

The other position in the urinary tract where there is a particular tendency for stones to form is in the bladder behind the intravesical projection of an enlarged prostate. This area is also undrained by gravity and is very inefficiently cleared in the act of micturition because in such cases residual urine is commonly present

I first became interested in posture in relationship to the formation of renal calculi when in 1921 I had under my care a patient with enormous stones in each kidney He had suffered from gunshot wounds in the lower extremities for which he had been treated for many months by splints and extension *his feet being kept continuously higher than his head* It seemed clear that the stone formation in this case was the combined result of sepsis and renal stasis



Renal calculi removed by operation (above) and passed after exercises

METHOD

For a good many years I have been in the habit of encouraging patients upon whom I have operated for renal calculi to do more than merely maintain intense diuresis for I have given them exercises in posture to carry out combined with this The instructions are as follows One day out of each week *on waking drink one third of a litre bottle* of Evian, Contrexéville, Vichy Vittel or other water then adopt the following postures spending five minutes in each —

(1) Lying flat on the back with only one pillow under the head.

(2) Lying flat on the face

(3) Lying on the right side

(4) Lying on the left side

(5) Kneeling with the knees drawn up to make the thighs vertical whilst the trunk is bent downwards onto the bed, so that you are resting on the upper part of your chest, the head being turned to one side By this means the body is turned half upside-down.

After resting for five minutes drink the second third of the bottle and repeat the postures as before Then drink the remainder of the bottle, and after a short rest and a short walk take breakfast.

EFFECTS

In a recent case the benefits of such treatment were unusually obvious.

The patient a man aged 48 in the middle of August had suffered from an attack of severe left renal colic He had had no other symptoms of calculous disease nor had he ever had pain referred to the right side of his urinary tract Radiograms showed in the left uretero-pelvic juncture a single stone about 8 mm in diameter (see Figure) which was proved by a Uroselectan radiogram to be causing considerable hydronephrosis In the bottom of the lower calyx of the same kidney was a much smaller stone 3 mm in diameter *But it was found that both kidneys were affected with calculous disease for in the* lowest part of the lower calyx of the opposite kidney was one small stone and two others much more minute

On Sept. 1st the stones were removed from the left kidney by pyelolithotomy the larger one from the uretero-pelvic juncture the other by means of forceps dipped into the lower calyx. On Sept 21st the above mentioned exercises were begun and performed daily On the

26th, after an attack of renal colic, on the right side this time one small and very rough calculus was passed Further colic on the right side occurred on the 29th, followed by the passage of three small fragments of stone A radiogram on this date showed the largest calculus from the right kidney to be now held up in the ureter at the level of the right sacro iliac synchondrosis This and another piece were passed on Oct 2nd. A radiogram taken on Nov 30th shows the urinary tract to be now clear of calculi

The results obtained in this case demonstrated very clearly the value of this method of drainage of the kidneys by postures, and it seems reasonable to hope that this patient may, if he continues such treatment, avoid the formation of further stones The most important posture in my opinion is the knee chest position, which can only be improved upon by those patients who can stand on the head or upside down on the neck and shoulders

CLINICAL AND LABORATORY NOTES

DIFFUSE GASTRIC POLYPOSIS WITH PERFORATION OF THE DUODENUM

By C C Holman, M B Camb , F R C S Eng
SURGEON TO THE NORTHAMPTON GENERAL HOSPITAL

Diffuse gastric polyposis, to give it one of several names, is a rare disease In the case described below there was the very uncommon complication of acute perforation of the duodenum

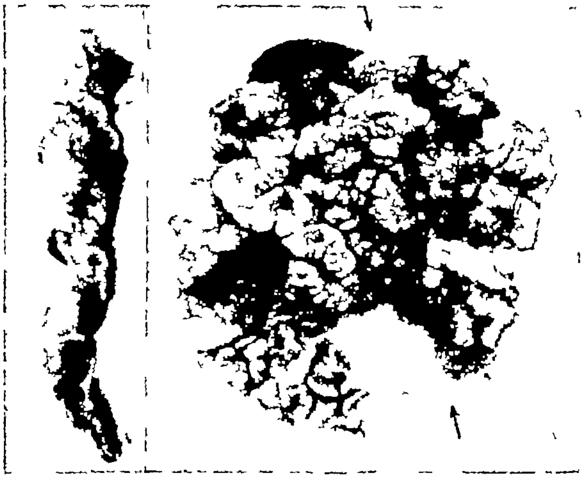


FIG 1 —The macroscopic appearance of the gastric mucosa with a section (left) through the part shown by the arrows

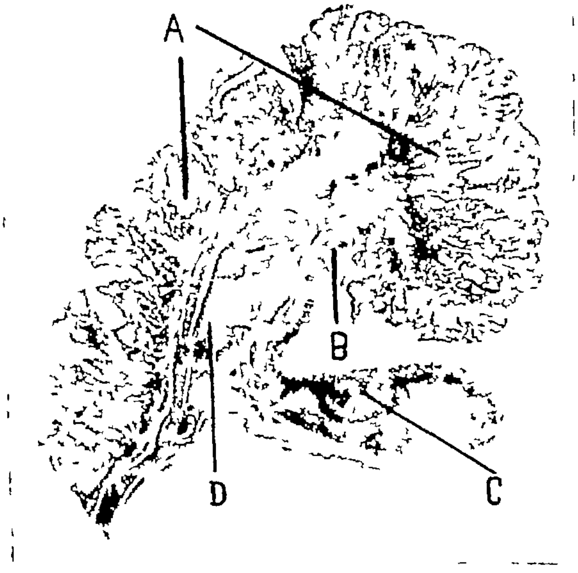


FIG 2.—Section of mucosa showing A œdematous polypoid mucosa changing abruptly at B to normal epithelium of the cardia (C) D muscle coat. (× 2½)

The patient, a married woman aged 45, of spare physique, was seen on August 13th, 1935, in consultation with Dr Morton Kahn For about a week she had been complaining of abdominal pain of a colicky nature, but previously her health had been good. At noon on August 13th she was seized with acute pain referred to the right side of the abdomen When I saw her she was in great pain the abdomen was rigid, but an indefinite tumour could be felt to the left of the umbilicus She was moved to the Northampton General Hospital and while there complained of the pain coming on in spasms Although her condition was suggestive of an acute perforation I was puzzled to account for the tumour Operation was clearly necessary and was carried out at 6 P M On opening the abdomen some extravasation was seen below the liver and a small perforation on the anterior wall of the first part of the duodenum was found and sutured I then examined the stomach which felt as though filled with some pultaceous material To ascertain what was wrong I opened the stomach and a polypoid condition of the mucosa was at once apparent I closed the incision and proceeded to remove about three-quarters of the stomach, dividing the duodenum at the level of the perforation and the stomach just proximal to the affected portion

Pathological report —Approximately three quarters of the pyloric end of the stomach, opened along the greater curve Apart from a narrow margin of normal gastric mucosa at the cut edge of the stomach, the whole area is thrown into irregular œdematous polypoid folds up to

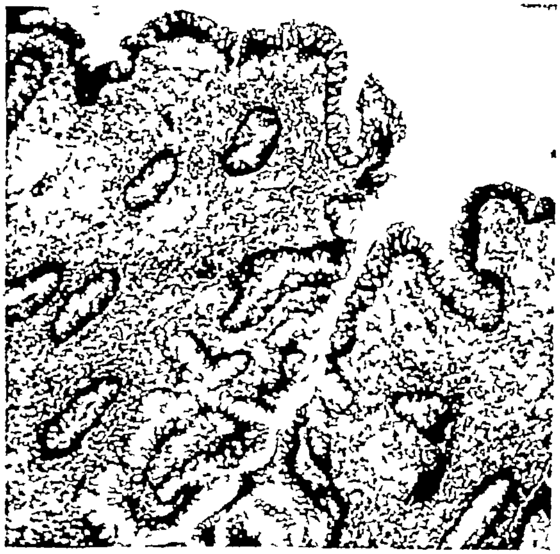


FIG 3.—Section of the mucosa showing œdema and chronic inflammation of the stroma (low magnification)

1 in thick. The condition ends abruptly at the pylorus but the duodenal mucous membrane appears inflamed and congested.

Sections show great thickening of the mucous membrane due largely to œdema and chronic inflammation of the stroma There is some evidence of proliferation of the glandular structures which consist of distended tubules lined by tall columnar mucous secreting cells There is a *sharp transition between the affected area and the normal* mucosa of the cardia.

Fortunately the patient made a good recovery and was seen in good health 15 months after leaving hospital.

The specimen is in the Museum of the Royal College of Surgeons and I am greatly indebted to the curator Dr L W Proger for sending me the photographs and the report

TROPICAL CHEIROPOMPHOLYX

By Denis J G Fitz Patrick L M

Tropical cheiropompholyx is endemic in tropical Africa and probably India Nothing is definitely known of its cause but presumptive evidence points to an anaerobic bacterium which attacks the palmar and interdigital aspect of the hands and the plantar aspect of the feet The condition is sometimes acute in those who wear gloves and footgear

The disease makes its appearance on the hands in the form of vesicles buried in the skin Irritation and destruction of the epidermis follow with serous discharge after which the eruption may (1) fade away usually to reappear again (2) cause rawness of the hand or (3) make its appearance on the feet causing lameness and great discomfort The only cases in my experience in which it has healed of its own accord are those in which the sufferers have moved to a more temperate clime After many failures and temporary successes however I found the following a specific coal tar 3 powdered coal 1 zinc oxide 4 lanolin and vaseline 12 This ointment is rubbed well into the affected parts, and no occlusive dressings are used apart from a loose glove or sock to prevent soiling of bedlinen In conjunction with the above resorcin soap was used Every case of tropical cheiropompholyx I have treated yielded within ten days and I have successfully employed the same treatment for squamous eczema For the moist types of eczema I use this powder zinc oxide 5 powdered talc 20

Lourenco Marques Portuguese East Africa.

MEDICAL SOCIETIES

BRITISH PSYCHOLOGICAL SOCIETY

At a joint meeting of this society (medical section) with the Institute for the Scientific Treatment of Delinquency on Dec 10th, 1936 Dr Edward Glover chairman of the scientific advisory committee of the Institute being in the chair a discussion on

The Unwilling Patient

was opened by Dr Denis Carroll, director of the Institute He discussed the technical problems arising when a patient who did not wish to be treated was coerced into attending a psychiatrist for the purpose of carrying out a course of treatment He deliberately excluded from discussion the very large numbers of *patients in whom the psycho-analyst* recognised unconscious unwillingness The patient treated under duress might be a delinquent for instance a man bound over with treatment as a condition a man who regarded treatment as punishment or as a means of evading punishment or a prisoner who agrees to be treated as a matter of discipline; or among non-delinquents might be instanced certain alcoholics psychotics under certificate neurotics and character cases manœuvred into treatment by relatives or friends and many children He confined his paper to the delinquent in whom he demonstrated that the lack of desire to get well is of the same nature as that found in non delinquent patients and consequently the technical problem reduced itself to that of adapting ordinary psychotherapeutic methods to the particular case of delinquents in such a way as to establish a positive drive to treatment

The special points were first that the lack of desire to get well was often quite conscious or only thinly disguised second the identification of the doctor with a harsh super ego was greatly facilitated by the nature of the situation This might be got over by making a strong positive contact at the first interview and/or by careful choice of the therapist Other devices were to diagnose the sign and quantity of the initial transference manifestations and so make it possible to plan how to be a good object in the Klein sense—e g by *arranging to appear* to the patient as a rescuer from his trouble Or the delinquency might be treated under the guise of treating some other condition—e.g a man repeatedly convicted of theft who was ostensibly treated for his lack of self-confidence without any apparent connexion between the doctor and the court Aggressive impulses and unconscious paranoid anxiety systems played a large part in the psychogenesis of delinquency as in psychosis the difference being that the psychotic dealt with these problems by flight from reality whereas the delinquent did so by manipulating reality by his delinquency He showed how this led to a difficulty in treating delinquents which was not present in psychotics The types of treatment possible were sociological physical and psychological In the first two of these the difficulty was administrative only in psychological treatment suggestion and superficial analysis could be facilitated for unwilling patients by deliberately coaxing a positive transference Such devices precluded deep analysis in which the underlying aggressive and paranoid systems had to be resolved It meant a long analysis with a long early negative stage and called for special qualities in the physician such as deep personal analysis great patience and the rare ability not to dislike such patients

Aim in treatment was important Radical cure could only be reached by deep analysis and resolution of negative transference; partial cure by stabilisation by sociological methods and suggestion The latter tended to produce greater inhibition than was present at the outset and was probably one of the ways in which moral method worked In some cases one might aim at alteration transmuting the delinquency by partial analysis into an obsessional state In methods aiming at partial cure duress did not necessarily prejudice the prognosis None of the methods were of avail if the physician allowed himself to be identified with the bad restraining parent Deep analysis was lengthy, and this fact had to be borne in mind in making the initial recommendation to the court It seemed that psychopathic personalities would *not* stabilise better by non-analytical methods though apparent cures would be easier Delinquency with neurosis would be easier to stabilise by non analytical methods than delinquency by itself

The criteria for deciding on psychotherapy rather than on other methods of treatment for the unwilling delinquent were, Dr Carroll considered, (1) Age, youth being best, a positive transference had to be present or the means to get it readily available (2) If a grip were needed, it should be adequate (3) Last and most important, the possibility of an unconscious drive being found which would induce willingness—e g , as would be evidenced by a desire for love or by a tendency to use the doctor as a whipping block or as a bolster between say the patient and his relatives Coercion was, he thought, sometimes desirable Some patients were too slippery unless forced , in others strong and rapid transference manifestations, apart from a transference neurosis, might make it desirable It might also be of service if the patient's rôle were complementary to the doctor's—e g , the presence of a gentle manner in the physician with a timid or effeminate patient A patient with difficulty in expressing or admitting to himself his angry, persecutory, or jealous reactions to real situations might respond well to force Coercion might provide an outlet for a masochistic type

Our knowledge of the treatment of delinquency was, concluded Dr Carroll, incomplete and he hoped research would be carried out on non recidivist criminals and into clinical types He did not think treatment need be more difficult in jail provided the doctor had a free hand without restrictions on secrecy and was able to continue treatment after discharge and provided also that treatment was voluntary and was not identified with punishment or its evasion He thought compulsion should be more deliberately used or avoided for those on probation than was the present fashion

TWO TYPES OF UNWILLINGNESS

Dr W H de B Hubert described the initial overwillingness of the delinquent patient who preferred probation, with treatment as a condition, to prison or who considered that while serving a sentence he might derive from treatment special consideration from authority or feel relieved of his sense of guilt at being punished by society because he believed that treatment implied that he was ill When the disadvantages of treatment had been encountered he would tend once more to show "unwillingness" towards his physician as he had shown by his previous behaviour his "unwillingness" towards society The unwillingness of the patient to be treated for functional nervous disorder apart from delinquency was not so much an attitude towards the physician as a member of society but was often an illogical reaction forming part of the total reactive pattern which made up the patient's illness The speaker took as examples of these two types of unwillingness the homosexual and the schizophrenic patient

In discussing the view that there was a congenital and absolute tendency towards homosexuality in at least a portion of that type of patient Dr Hubert said that isolation from the opposite sex showed the large part played by circumstance in the development of homosexuality , but, from careful observation of a large number of cases, several authorities had agreed upon an irresistible congenital determinant towards it , more recent authorities, starting with Freud, introduced the psycho dynamic point of view , while admitting a congenital factor varying in different cases they found evidence also of such a tendency in everyone and demonstrated particular psychological mechanisms in early life which allowed the tendency to operate Unwillingness in patients of this class therefore might not only be a very cogent argument but also, in a totalistic sense, a deep seated biological unwillingness

In society the powerful factor set against homosexuality, against which the patient showed his unwillingness, consisted of two parts the religious and moral aspect and the concept of anti social behaviour defined in a particular legal code These were sometimes erroneously assumed to be the same Homosexuality appeared first in legal code in Roman law of the fourth century when the penalty of vindices flammæ was fixed Modern criminological views were derived with modifications from that, but a turning point in attitude occurred in France at the time of the revolution The nations might now be divided into two groups, in one, which included England and the United States, homosexuality was condemned in toto , in the other, which included France, Belgium, Italy, and Japan, homosexuality was not punished except in special circumstances The variation in legal code appeared to have little influence on the prevalence of the condition These various factors provided the patient with a classical tradition which gave him justification for his attitude In dealing practically with a case one had difficulty in knowing at what result one was aiming and one might regard the patient's unwillingness as the point at which one could see in condensation a historically developed behaviour anomaly up against its logical counterpart The differences in social relation and in attitude towards treatment in the female homosexual was also discussed

Homosexuality had to be viewed as a behaviour reaction resulting, first, from a biological anomaly , secondly, a complex personal development , thirdly, the peculiar position society had evolved as his environment While it was too early to speak definitely, evidence was collecting which would probably allow the definition of various classes of homosexuals on the basis of their types of total behaviour anomaly, of which overt homosexuality was but a part Then the factor of unwillingness would be much more clearly defined One might then hope to see clearly (1) in what cases no psychological modification could be hoped for, (2) when the general behaviour reaction could be altered by therapy to help the individual in his relationship to society, and (3) in what cases a heterosexual development might be attained

In his other example of an unwilling patient Dr Hubert described the change in imagery and thought process in terms of function analysis which he had observed in a case of schizophrenia occurring at the same time as a change from a willing to an unwilling attitude, which seemed to indicate the mechanism by which such an alteration could occur in a large group of patients suffering from this disorder

DISCUSSION

Dr O H Woodcock said that though there were drawbacks to classification he thought that among unwilling patients some groups stood out. There were the sullen silent type and the garrulous who kept up a constant flow of talk away from the point Then there were the persistently innocent who maintained that there was mistaken identity and the really sensitive with a pronounced feeling of inferiority; one of that kind had ceased to attend because she felt the doctor must be bored with her Absenteeism was a common form of resistance The delinquent s life was often so hard that he responded readily to the doctor s attitude

Dr J R **Rees** thought that inexperience on the part of the psychotherapeutist was one cause of the patient s unwillingness to start treatment. Most patients became willing after a few attendances The non judicial and non moral attitude of the doctor changed that of the patient surprisingly The speaker had found that his opening gambit a statement that he had no connexion with the court and was only interested in the individual, was often successful He separated the delinquent s action from his self and asked the patient to coöperate with him in finding out why the symptom appeared The homosexuals formed a group by themselves they had usually read books on the subject which left them hopeless; treatment was consequently best directed to the other symptoms which were always present. He thought the results of treatment of those serving sentences disappointing but he was encouraged by the numbers coming for treatment of their own accord before getting into the hands of the police they were very willing patients He thought it very important that every case should be seen between their hearing and the passing of sentence; coöperation was then much easier and the doctor could give a much more hopeful prognosis to the court

Dr **Glover** said that special methods of approach might be necessary in dealing with delinquents but the methods of treatment themselves were not new except in the way they were combined

Dr **Prynns Hopkins** agreed with Dr Rees that the time at which a delinquent was brought for treatment was extremely important. He mentioned some observations of electrogalvanic response in genuine murderers in Moscow These had shown that the greatest emotions were aroused immediately after arrest; apparently at that stage conflict was aroused partly by apprehension for the future and partly by the conflict between the super-ego and the action After trial judgment and serving term the conflicts were quieted down This work was of importance in showing when would be the best time to treat delinquents

Dr H G **Baynes** said that nearly everyone who had committed an anti-social act expected punishment. He thought direct transference was necessary in treatment and that transference achieved in a roundabout fashion was on the wrong basis

Dr E A **Bennet** thought the objective method of approach was often best as some patients preferred not to be fully understood at first In America automatic writing and drawing had been used for patients that were unapproachable He had found that automatic writing could be produced by quite simple devices and was a successful initial method more especially for schizophrenic patients

Dr J D W **Pearce** said that most of his juvenile court cases had been seen before judgment had been given and he would be interested to find out if such children responded better than the rest to treatment

Dr W R. **Bion** considered that collusion with the relatives put the analyst in an awkward position which forced him to take up a false attitude

Dr **Paterson Brown** had found that in child guidance clinics the analyst had to reach the layer of depression and then he could turn an unwilling into a willing patient

Dr **John Rickman** thought it important that the patient should be assured that he would be given treatment after discharge from prison

Dr **Glover** suggested that the investigation of empirical methods was of importance in a new science

REPLY

Dr **Hubert** agreed with Dr Rickman that the continuation of treatment after discharge from prison was essential That time was particularly difficult for the patient —Dr **Carroll** expressed disappointment that his provocative points had not been challenged. He agreed with other speakers that treatment should continue under the same physician after the patient s discharge from prison

MANCHESTER MEDICAL SOCIETY

At a meeting of this society on Dec 2nd 1936 Dr R E **Lane** opened a discussion on

Industrial Diseases

limiting his survey to industrial poisons There was he said a great difference between the toxicity of a substance per se and the extent to which it constituted a health hazard in industry Toxicity was dependent on chemical nature the danger to health on the physical properties of the compounds handled The ease of absorption was a vital point In the motor body building industry lead poisoning arose as a result of the inhalation of fine particles of metallic lead An attack of metal fume fever was brought on only by the inhalation of metal fume in a very fine state of subdivision and dispersion If the same fume were allowed to stand for a short time before inhalation fever no longer occurred because a clumping of the particles had taken place; the chemical nature of the fume had not altered The clinical picture of industrial poisoning was often not what would be expected after reference to standard works on toxicology Arsenic was cited as an example Dr Lane went on to illustrate from the lead trades the type of prophylactic measures to be adopted in any dangerous trade; the collaboration between medical and other technical experts; the doctor s preparedness with accurate knowledge when consulted by the employer

Dr W M **Goldblatt** referred to the prevalent lack of knowledge of the effects of industrial products on the worker Often attention was only drawn to the dangers after calamities had occurred Systematic research was needed in industrial medicine At any moment a worker might present some obscure and unsuspected idiosyncrasy when the known facts about a product had led to a belief in its harmlessness Criteria should be worked out for the detection of susceptible subjects particularly to skin hazards and such workers allocated to employment remote from exposure A grave responsibility rested on the practitioner who diagnosed industrial disease He should not conclude that a man was suffering from an industrial disease just because he presented a symptom of a condition which might arise from his work It was unwise for the dermatologist to conclude that a skin irritation was due to a dyed garment because on previous occasions he had come across cases attributed to this dye The same name often referred to dyes of different composition. There were, however, difficulties in carrying out investigations which must not interfere with production on the one hand or on the other with the morale of workmen a little suspicious of medical service in industry Routine blood urine, and X ray examinations could only be made with careful organisation and administration

Dr J M Davidson spoke of the importance of obtaining a full employment history and the significance of trifling symptoms New risks arose from new uses of old poisons and new industrial processes, as in the risk from electric arc welding and manganese poisoning

Mr Harri Heap referred to the importance of accurate methods of chemical analysis which had thrown new light on lead poisoning There was, he said, a close relationship between lead and calcium metabolism in the body and need for making sure of the normal occurrence in the body of various mineral elements

REVIEWS AND NOTICES OF BOOKS

Paget's Disease of the Nipple

By Keith Inglis, M D, Ch M, Professor of Pathology in the University of Sydney London Humphrey Milford, Oxford University Press 1936 Pp 233 36*s*

This monograph is the product of a great deal of painstaking histological research, carried out with one eye on the clinical appearances of Paget's disease and the skin lesions which resemble it so closely It is illustrated by numerous beautifully reproduced microphotographs, and since it contains a full bibliography, with brief but pertinent criticisms of many of the articles, the book can fairly claim to be the most complete treatise on Paget's disease which has so far appeared in English

Detailed descriptions are given of 8 cases in which Paget's disease of the epidermis and ducts was present without scirrhous carcinoma in the breast, of a further 7 cases in which scirrhous carcinoma also was found infiltrating the connective tissue of the breast, and of a third group of 8 cases in which it was doubtful whether the cancerous process of Paget's disease had or had not given rise to scirrhous carcinoma of the breast Prof Inglis's work confirms the observations already made by Muir and Cheatle, and it leads him to conclude that in Paget's disease the epithelium lining the ducts is invaded by cancer cells which spread within it both outwards to the skin and downwards into the ducts from a primary focus close to the duct outlet

Subsequent chapters describe cancerous infiltration of the nipple by cancer spreading from the breast, simple eczema of the nipple, cancer en cuirasse, and certain primary growths of the nipple, all of which have to be differentiated from Paget's disease Several chapters are devoted to precancerous changes in squamous epithelium in many parts of the body, including extra mammary Paget's disease, and the author describes how they may be distinguished from true Paget's disease of the nipple Some of this section is not easy to follow but the chief feature upon which the author lays stress is that whereas Paget's disease is characterised by invasion of healthy epithelium by cancer cells in these other conditions the cells of the epithelium are themselves altered by degenerative hyperplastic, and neoplastic disease

Though there are slight differences between the views held by Inglis and those previously expressed by Muir the essential fact upon which both are agreed is that Paget's disease of the nipple indicates widely spreading cancer in the ducts of the breast which demands equally extensive treatment No one, however, has yet stated clearly the exact relationship between the Paget cells in the ducts and the cells of the scirrhous carcinoma which forms eventually in the breast substance

Williams' Obstetrics

Seventh edition By Henricus J Stander, M D, F A C S, Professor of Obstetrics and Gynecology, Cornell University Medical College, Obstetrician and Gynecologist-in-Chief, New York Hospital, and Director of the Lying in Hospital, New York City London D Appleton Century Co Inc 1936 Pp 1269 40*s*

Whitridge Williams died in 1931, one year after he had revised the sixth edition of his text book of obstetrics The present issue has been completely revised, retaining as much as possible of Dr Williams's text as is consistent with new developments in obstetrics, the general plan of the book remaining unchanged Three new chapters have been added, one dealing with the hormones as related to pregnancy, another with urinary complications particularly pyelitis, and a third with analgesia and anæsthesia The book is stated to embody the principles of obstetrics as carried out at the Johns Hopkins Hospital, and as such remains predominantly conservative in its teachings The physiology of childbirth occupies more than a third of the book, this section is of great interest and abundantly illustrated

As one of the most popular and widely read works on obstetrics in America it would be of interest to compare the principles enunciated in this book with current teaching in this country Take the chapter dealing with the treatment of antepartum hæmorrhage There are few who do not teach that the vaginal pack is virtually useless as a hæmostatic, particularly in the hands of the doctor faced with such an emergency, perhaps single handed, in the patient's home Yet English text books lack the courage to condemn this treatment in print In this book the "general practitioner is strongly warned against the employment of the vaginal pack " Or take the vexed question of the management of a case with a minor degree of disproportion—"We believe that the claims of the advocates of the induction of premature labor may be disposed of by a reductio ad absurdum—namely that better fetal results could be obtained by allowing all patients in whom it appears indicated to go to full term and performing craniotomy whenever spontaneous labor does not occur " But it would be easy to give equally telling extracts from any chapter of the book, more especially perhaps that on amnesia, analgesia, and anæsthesia

The work is well produced paper and type are good the illustrations are excellent and *numerous* and as is usual in American text-books there is an extensive bibliography at the end of each chapter Those who teach and practise obstetrics will find the matter and advice contained in this volume eminently practical and sound and students may be assured that there is little which would not be accepted at obstetric examinations in this country

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Food and the Principles of Dietetics

Eighth edition By ROBERT HUTCHISON M.D LL.D F R C P Consulting Physician to the London Hospital and to the Hospital for Sick Children Great Ormond street and V H MOTTRAM M A Professor of Physiology at King s College of Household and Social Science University *of London, London Edward Arnold and Co* 1036 Pp 634 21s

THIS new edition the preface states has been necessary after a lapse of only three years because of the pace now set by research in nutrition For the most part indeed the alterations and additions are made on account of recent research. Chemical formulæ now take their place in the descriptions of vitamins B_1 and C and the separate factors of vitamin B_2 are mentioned Dr Corry Mann s experiment which proved the great advantage of giving extra milk to school boys is described and McCance and Shipp s analyses have caused profound modification of the chapters on fish and meat The account of the changes induced by cooking no longer speaks of pellicle formation It must be a matter of regret to the authors that the analyses of fruit, vegetable and nuts by McCance Widdowson and Shackleton were published too late to be utilised in this edition. The book has also been revised in other respects ; a charming and characteristic chapter on the history of dietetics has been inserted at the beginning from which one gathers that Hippocrates s *remarks on digestibility were as penetrating as any* recorded before the coming of chemistry in the nineteenth century Diets are suggested for expectant and lactating mothers and for those in training for athletics The basal requirements in calories computed by the B M A the Ministry of Health and the League s technical committee are set out

Originally based on lectures given to students at the London Hospital in 1000 and in spite of all the growth and change it has suffered in the intervening period this book still retains the simple wording and freshness of interest of a great teacher It covers a very wide field starting with an account of the constituents of food and their energy equivalents, going on to consider food requirements in *various circumstances* and then giving a detailed account of almost every conceivable article of food and drink The origin structure, nutritive value digestibility cost methods of cooking and uses in dietetics are gone into for nearly every item While the book is suitable for any layman who wishes to learn about food and for *dietitians it was presumably written primarily for* doctors They might like still more information for instance about the relation of vitamin D to the male sex hormone and œstrin about the use of high carbohydrate diets in diabetes and about canning

Many groups of readers will be grateful to the authors for presenting so much useful information *in such an acceptable manner The book is full* of common sense and understanding and in spite of the necessary amount of detail it is easy to read

Employment and the Depressed Areas

By H POWYS GREENWOOD London George Routledge and Sons Ltd 1036 Pp 167 3s 6d

MEDICAL men and women are citizens and the subject discussed here is of urgent importance to all concerned for the welfare of their country The economic body of the country *is grievously sick in* some of its members the sickness has persisted unduly long and it might almost seem that the prospect of the special areas is one of lingering death Mr Greenwood s interest has been stirred primarily by a visit to West Cumberland the least known and realised of the special areas He might well be *downcast after seeing Arlecdon* but he refuses to regard the position there or elsewhere as hopeless And with refreshing optimism he writes of areas of opportunity and entitles his book Employment.

There are early chapters on the history of unemployment on economic and political theory and on the totalitarian states which provide interesting reading These lead to the main thesis which develops *not* only the necessity but also the feasibility of attracting new industries into the areas Everyone recognises that the old-established industries will never recover their former prosperity The social services which have been introduced are admirably served by devoted workers but these are palliatives salves to a wound means of easing the pain of unemployment There must be new remedies and a break with tradition if recovery is to take place Mr Greenwood is convinced that this break lies in the redirection of industry by inducements to settle in the areas and the recognition by industrialists that *there is a profit*able field of opportunity This thesis gains *support* from the views expressed by the late Commissioner for the Special Areas in a report which is reviewed on another page Mr Malcolm Stewart recommends the control of further expansion of industry in Greater London and the offer by the State of inducements *to attract industries to the special areas*

A Handbook of Hygiene for Students and Teachers

By CYRIL C EASTWOOD B Sc M.B M R C S L R C I D P H Assistant M O H Borough of Worthing formerly Lecturer in Hygiene and Physiology to the University of Leeds London : Edward Arnold and Co 1030 Pp 358 6s

THIS little book simple in diction and illustration really attains the high aim of teaching health *for it is free from banality and pedantry Some manuals* give the impression that the author is talking down to the reader ; but Dr Eastwood speaks to and not at his readers instilling confidence which is the beginning of understanding The book includes no more than every person should know of the working of his own body and of hygiene except perhaps some *aspects of school medicine with which teachers should* be familiar but which need not be taught specifically to their scholars. Dr Eastwood does not avoid technical words but he seldom uses them where he can replace them by words in the common vocabulary The few references to pathological conditions are introduced without mystery or alarm and mainly as *natural sequences to the neglect of hygiene*

Did we not know it from other sources this book would tell us that Dr Eastwood is an experienced teacher of physiology to the uninitiated, for he answers in anticipation the questions the novice is likely to ask and as he goes along he is careful to make sure that all is really understood He has produced an excellent book, of which we hope the circulation will accord with its merit When a new edition is called for, we would ask the author to reconsider "a naturally insensitive bowel" as one of the causes of constipation The chapter on reproduction might be enlarged, for its shortness suggests that the subject is being got out of the way In the chapter on foods the weights perhaps should be given in ounces as well as in grammes, and some indication added of the requirements of the body in terms of pounds and ounces of purchased foodstuffs

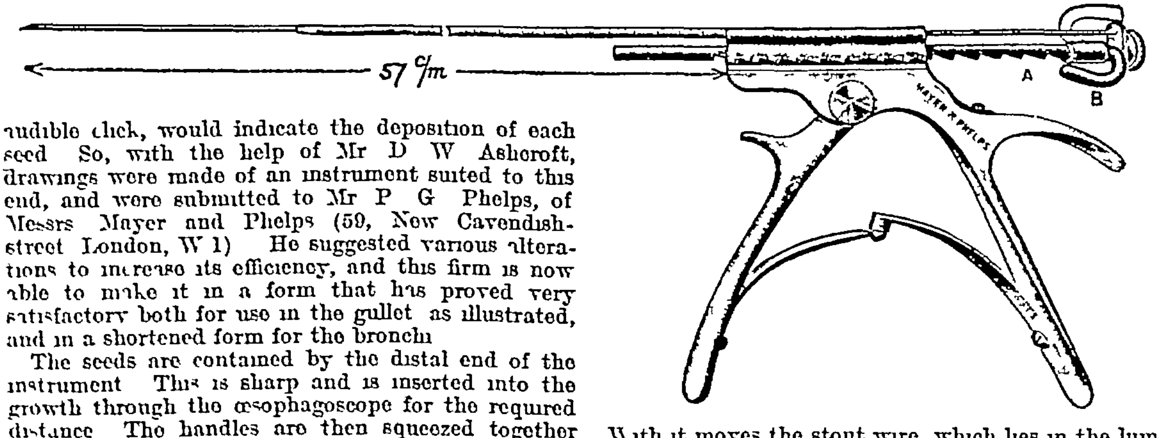
British Journal of Children's Diseases

In the October–December issue (vol xxxiii) Dr J S Cookson contributes a paper on the Erythrocyte Sedimentation-rate in Scarlet Fever and its Complications based on the study of 76 cases in various stages of the disease His conclusions are as follows (1) The sedimentation-rate (E S R) is a simple and sensitive method of determining the progress of the disease (2) A considerably raised E S R on the fourteenth day of disease means that complications either have developed or will develop (3) The E S R is useful in differentiating the type of albuminuria, a high rate indicating acute nephritis (4) With the exception of benign albuminuria and serum reactions the complications of scarlet fever produce a rise of E S.R before they cause signs and symptoms and during the presence of the complications (5) There is no definite relationship between the E S R and the other blood changes (6) The E S R is a useful index of the efficacy of treatment (7) It is altered by a change in plasma protein causing increased aggregation of red cells by alteration of the viscosity and indirectly related electric burdens —In an article on Streptococcal Peritonitis complicating Scarlet Fever Dr David Erskine, who records a personal case, states that peritonitis is a rare complication which may occur early, as in Rabinovitz's cases which were probably examples of a primary blood-borne infection of the peritoneum, or later when the peritonitis is probably due to inflammation of the mesenteric glands Erskine's case was that of a male infant aged 18 months, who developed peritonitis on the twenty-first day of a moderate attack of scarlet fever Laparotomy was performed the next day, when a large quantity of clear fluid without localisation or adhesions was found in the peritoneal cavity Cultures of the fluid showed a pure growth of hæmolytic streptococci Death took place 10 hours after the operation. The autopsy showed a fairly large indurated mass in the ileocæcal region containing several enlarged mesenteric glands, one of which had suppurated.—Dr L Helen Macfarlane records a case of Cancrum Oris following Measles The patient was a boy aged 3, in whom the complication developed on the eleventh day of a mild attack of measles Examination of the blood showed numerous white cells with 78 per cent polymorphonuclears, so that the condition was not one of agranulocytosis. Treatment by injections of antiscarlatinal serum, diphtheria antitoxin, and sulphostab was unsuccessful, and he died 5 days after the onset of cancrum oris Smears from the necrotic area in the mouth showed mixed Gram-positive and negative organisms but no spirilla The case was of special interest in that, unlike most victims of cancrum oris, the patient was a healthy, well-grown child until he contracted measles which appeared to be mild and uncomplicated by broncho-pneumonia or enteritis — In an article on the Treatment of Children by Artificial Light Dr Eva Morton states that she has obtained excellent results by ultra-violet ray radiation in cases of anæmia and debility, bronchitis and catarrhal conditions generally, and skin diseases of various kinds —The abstracts from current literature are devoted to urogenital diseases

NEW INVENTIONS

A NEW RADON-SEED INTRODUCER

In carrying out palliative treatment of carcinoma of the gullet by implantation of radon seeds I have never found an entirely satisfactory instrument It seemed desirable to have something which, by an audible click, would indicate the deposition of each seed So, with the help of Mr D W Ashcroft, drawings were made of an instrument suited to this end, and were submitted to Mr P G Phelps, of Messrs Mayer and Phelps (59, New Cavendish-street London, W 1) He suggested various alterations to increase its efficiency, and this firm is now able to make it in a form that has proved very satisfactory both for use in the gullet as illustrated, and in a shortened form for the bronchi



The seeds are contained by the distal end of the instrument This is sharp and is inserted into the growth through the œsophagoscope for the required distance The handles are then squeezed together and a single seed is deposited , this is indicated to the operator by a click By the use of the scale on the barrel (see Figure) each seed can be put exactly where the operator wishes until any desired grouping has been obtained

The instrument when fully charged contains ten "short Muir" seeds, each 7 mm long The method of loading is very simple and in brief depends on the turning of the ratchet "A" through a half circle by the lever "B" (see Figure) This disengages the ratchet and allows it to be drawn backward With it moves the stout wire, which lies in the lumen of the instrument and pushes out the seeds when the instrument is in action

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THE LANCET

LONDON: SATURDAY, JANUARY 2, 1937

MATHEMATICS AND MEDICINE

STATISTICS are curious things. They afford one of the few examples in which the use, or abuse, of mathematical methods tends to induce a strong emotional reaction in non-mathematical minds. This is because statisticians apply, to problems in which we are interested, a technique which we do not understand. It is exasperating, when we have studied a problem by methods that we have spent laborious years in mastering, to find our conclusions questioned, and perhaps refuted, by someone who could not have made the observations himself. It requires more equanimity than most of us possess to acknowledge that the fault is in ourselves. A colleague of a famous contemporary statesman has been quoted as complaining that he used figures as though they were adjectives. The medical profession as a whole would not find it easy to counter a similar charge. For most of us figures impinge on an educational blind spot. We have never been taught to recognise them for what they are. This is a misfortune, because simple statistical methods concern us far more closely than many of the things that we are forced to learn in the six long years of the medical curriculum. Many of our problems *are* statistical, and there is no other way of dealing with them. In preventive medicine this is so obvious that it has acquired general recognition. In laboratory work, though recognition has come more slowly, it is now widely realised that it is very unsafe to base conclusions on statistically inadequate data. In clinical medicine recognition is coming more slowly still—so slowly that many avoidable errors and a sad waste of material still hinder progress.

The kind of problem that demands statistical treatment is familiar to all of us. What is the therapeutic value of antipneumococcal or of anti-streptococcal serum? What is the expectation of life of patients who are operated on for carcinoma at various sites and in various stages of development? What are the relative merits of artificial pneumothorax or thoracoplasty in the treatment of phthisis? In all such problems, and they could be multiplied ad nauseam, the unknown or uncontrollable variables are so many that no sound conclusion can be based on the observation of a few cases or on the uncritical assessment of many. Clinical science, like any other, is essentially experimental. We do things to our patients and we see what happens. It has become a truism that the history of a science is the history of its technique, and the technique of seeing what happens when we attempt to control disease is as yet very poorly developed. Because it is poorly developed we still do many things that we ought not to do and leave undone much that ought to be done. The omission from the medical curriculum of a short course in statistical methods has led to an unfortunate misconception of the real difficulty that we have to face. It is sometimes supposed, by those who have conquered their repugnance to statisticians and all their works, that our technical problem can be solved by passing over our figures to a mathematical expert and letting him do his best, or worst, with them. That way there is no real salvation. The mathematical statistician is trained to deal with numerical observations as such. He can expose statistical fallacies, and by inquiry he can often get behind the face value of the figures and allow for factors that are not immediately obvious from the tabulated findings. But his ignorance of medicine makes it as difficult for him to appreciate all the possible sources of error as it is for the medical man who knows no statistics to assess the real significance of his figures. Much can of course be done by the method of liaison, especially when it is close and understanding, but to be fruitful, it demands some knowledge of statistical methods on the one hand, and some experience of medical problems on the other. In the form in which it is too commonly practised it has another fatal disadvantage. The statistician who is presented with a mass of figures from a long and laborious inquiry has not infrequently to report that they are of little or no value because they have been wrongly collected. The time to allow for statistical factors is when an inquiry is being planned, not when it is completed.

In this issue we commence the publication of a series of articles by Mr. A. BRADFORD HILL, D.Sc., of the London School of Hygiene, which will, we hope, be of service to those who desire to gain an insight into the application of simple statistical methods to problems of the kind that face them in their daily work. In his earlier articles Dr. HILL sets out, in simple terms and with a minimum of mathematics, the various methods that the statistician employs in assessing the significance of numerical results, illustrating each method by examples which will be of interest to the medical practitioner or medical officer of health. In his later articles he considers a number of common fallacies and difficulties of interpretation that arise in dealing with data of this kind. We believe that this clear exposition by a statistician who has had a wide experience of the problems with which medical men have to deal, and of the difficulties which post-graduate medical students encounter in grasping statistical principles, will be welcomed by many of our readers.

ORAL SEPSIS

WHEN OKELL and ELLIOTT[1] showed that a patient with pyorrhœa usually has organisms in his blood after tooth extractions—and sometimes even in the absence of any deliberate trauma—it was obvious that their findings might alter the outlook on oral sepsis. If it was easy for living organisms to reach the circulation from septic gums the time had come to think again about the importance of "closed" as contrasted with "open" sepsis. It is not surprising therefore to find Fish and Maclean[2] bringing forward observations and opinions which if correct will modify not only medical notions but also dental practice. In the first place they confirm Okell and Elliott's findings, and underline them by quoting the unpublished discovery by Round, Kirkpatrick, and Hails that bacteræmia may be produced in pyorrhœa patients by simply allowing them to chew hard sweets. From this they pass on to consider the working assumption that bacteria may live and multiply in the apices of living teeth, and that the absorption of these or their "toxins" may lead to local bony changes in the jaws and to diseases in remote parts of the body.

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[1] Okell, C. C., and Elliott, S. D. (1935) *Lancet*, 2, 869.

Various careful observers have been able to grow streptococci from the pulp and apices of living teeth that have been extracted with special precautions against contamination from the gums, but it is questionable whether any hitherto available technique for this purpose has been really satisfactory. Fish and Maclean challenge both the technique and the positive findings. Setting on one side the well recognised pyogenic inflammations of the pulp and apices of dead teeth, they devote their attention to the common kind of case in which the teeth are alive but the maxillæ show bony modifications or other signs attributed to toxic absorption. Their conclusions may be summarised as follows. (1) At the apex of a tooth with living pulp there is never any histological sign of the round-celled infiltration that is the characteristic reaction of tissue to live streptococci, whereas when the pulp is dead, and streptococci are living in the necrotic material of the root canals, an intense round celled infiltration is always to be found. (2) All specimens of gum margin examined, even those from very young children, have shown some signs of round celled infiltration. It is well known that streptococci can nearly always be isolated with ease from the gums at all ages. (3) When teeth are extracted the organisms of the gums are pumped into the pulp by the rocking movements of the forceps, and that is why they can be found in sections of the extracted teeth (for the most part in the perivascular lymphatics). The same mechanism is held to account for the transient bacteræmia observed by Okell and Elliott, the organisms being pumped directly into the small blood-vessels. (4) With an appropriate technique, whereby the gum margins and pockets are partly sterilised and occluded by cautery, it is possible to extract teeth with living pulps from patients with pyorrhœa without contaminating either apex or pulp. The apices and pulps of such teeth, it is stated, were always sterile, whereas in controls where the gums were not cauterised they were always infected.

These interesting observations are rather unnecessarily overladed with arguments a priori. Not every pathologist will feel so certain as Fish and Maclean that the active infection of living tissues with *viridans* streptococci must inevitably be accompanied by a round celled reaction, or that streptococci must have a nidus of necrotic tissue if they are to maintain themselves for any time in the body. The "quiet periods" of relapsing staphylococcal osteomyelitis, for example, suggest other possibilities. But the clinical and pathological implications of the new work on oral sepsis are far reaching. Among them is the implication that the absorbing alveolar crests between pyorrhœic teeth, which are generally referred to as radiographically "infected," are in reality not infected at all, so that there is no reason why every mechanically useful live tooth should not be saved. The authors also say that the bacteræmia of extraction can be avoided as far as live teeth are concerned if the gums are prepared by preliminary cauterisation, and it is to be hoped that this statement, for which no direct evidence is produced, will be confirmed by actual experiment on an adequate scale. It is by no means apparent what effect the bacteræmia described by Okell and Elliott is likely to have upon the general health of otherwise normal persons, but there is one risk at least that might be eliminated by its prevention—namely, the determination of infective endocarditis in those with diseased or defective heart valves. And whatever the final verdict on these new observations, it is certainly a healthy sign that oral sepsis has come under serious experimental review.

FLUID AFTER OPERATION

Water has often been the therapeutic fashion. To-day, after a period when dehydration was hailed as the sovereign remedy, water is once more in the ascendant—or so it seems from a letter to an American contemporary which draws a touching picture of the earnest school mistress striving with daily drinking drills to make her charges water-conscious. In treatment the misuse of water is usually due to confusion of empiricism and reason. Fluid is useful in febrile perspiring patients, for instance, but the idea that it washes away bacterial toxins is ungrounded, and to try to flush out hypothetical and probably non-existent toxins from an eclamptic woman already sodden with unwanted fluid is neither logical nor desirable.

In many states of dehydration the need for water, or rather fluid, is obvious enough, and the patient in full possession of his faculties is not likely to suffer in silence. It is when he is no longer able to complain of thirst—or is forbidden to quench it—that the lack becomes a serious danger. This danger is fully recognised in the treatment of many conditions, such as diabetic coma, but we doubt whether the frequency and severity of postoperative dehydration is as widely realised as it should be. Many factors combine to deplete the fluid reserves of the patient who undergoes a major operation: preoperative starvation, hot operating theatres, excessive swaddling in blankets loss of blood, and postoperative vomiting may all take part and finally shock causes internal dislocations of fluid balance Elsewhere in our present issue Dr **Walther** reports some observations that illustrate both the gravity of surgical dehydration and the readiness with which it responds to treatment His data suggest that where the oral route is impassable saline is better given by rectum than intravenously and he surmises that fluid entering the circulation by way of the intestine may pick up protein in the liver and so become less liable to leak out of the vascular channel

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[2] Fish, E. W., and Maclean, J. (1936) *Brit. dent. J.* 61, 336.

The present popularity of intravenous saline infusions gives these observations practical importance Not many years ago the surgeon would marshal an array of scalpels ligatures coils of rubber tubing and bottles of cocaine and would proceed to dissect out a vein tie in a cannula and squirt in saline with an inadequate rubber pistoned syringe Small wonder that the operation was reserved as a last desperate attempt to revive the moribund Nowadays the technique is so simple that there may be a real danger of causing harmful waterlogging of the lungs by over enthusiastic use of saline There are of course many surgical occasions when fluid cannot be given by mouth and a few when rectal administration is also impossible It is in these circumstances that Dr **Walther** regards plasma transfusion as the ideal But when fluid can be given by the alimentary tract it is clearly desirable to introduce it in this way which (unlike intravenous injection) at least allows the body to regulate the rate of absorption and to reject excess if necessary If further experience confirms Dr **Walther**'s conclusions they should prevent us from forgetting that the patient has a mouth and an alimentary tract designed for the absorption of fluid.

CONTROL OF VENEREAL DISEASES

Whether through ignorance or lack of interest the general public is usually apathetic to the control of venereal disease and this attitude is reflected in the tardiness with which public policy adapts itself to meet the changing needs of the problem In the United States where the incidence of venereal disease is high, the vigorous propaganda instituted by a zealous public health service has in recent years caused some stirring of the public conscience In 1935 the mayor of New York City appointed a commission representative of New York (City and State) to study the methods of control adopted in the Scandinavian countries and in Great Britain where it was thought that some measure of success had been achieved The report [1] of this commission, which is now available includes a review and appraisal of the administrative measures adopted in this country for the prevention diagnosis and treatment of venereal disease and a critical comparison of these methods with those adopted in the Scandinavian countries in the light of brief observation and available statistics

It seems that in Denmark Norway and Sweden as in some of the British Dominions venereal diseases are notifiable by law and treatment is compulsory If persuasive methods fail the health authorities have power to enforce submission to medical care, including admission to hospital if this is considered necessary—a precaution which is commonly employed in the early infectious stages Penalties may be inflicted on those who knowingly transmit infections and power is given to trace contacts and known sources of infection. Coercive measures may be adopted for the non-coöperative or defaulting patient The Scandinavian peoples are well accustomed to the discipline of social control so that it is possible to enforce these regulations without serious difficulty Frequent use of in patient facilities is necessary because the populations are scattered and the facilities of treatment are often inaccessible In highly industrialised Britain where the population is largely grouped in relatively small areas and traditionally resentful of interference with personal liberty, central facilities for treatment are readily accessible and regulation for compulsory treatment would be difficult to enforce In other respects the measures adopted in these countries are similar to our own and include free diagnosis and treatment for all regardless of economic status In comparing the results attributable to these schemes the commission finds that there has been no decline in the incidence of gonorrhœa in any of the countries and that in Great Britain it has possibly increased in prevalence On the other hand the figures indicate a general diminution in early syphilis the reported cases in 1933 showing an incidence of 7 per 100 000 in Sweden 20 in Denmark and 30 in Oslo the chief city of Norway The commission formed the opinion that in Sweden and Denmark at all events the reporting of cases was faithfully carried out by medical practitioners and that these figures fairly represent actual prevalence For this country the figures are less impressive , in 1933 the number of new cases of syphilis applying to treatment centres amounted to 21 525 an incidence of 56 per 100 000 in a population of 38 000 000 Clearly this figure is not the total incidence because no account is taken of patients treated elsewhere than at treatment centres In its report the commission makes the guarded suggestion that lack of legal power for the enforcement of treatment in this country may be partly responsible for the disparity while recognising that this absence of legislation is due to the peculiar nature of the local circumstances it points out that a strong minority opinion in this country favours the introduction of laws to make venereal diseases notifiable and treatment compulsory

From the evidence collected by this commission and that available from other sources it seems to be established that the incidence of syphilis has declined in this country but it will be agreed that the rapidity of the decrease is hardly commensurate with the ease with which patients may be rendered non infectious by modern methods of treatment The success achieved compares unfavourably with that in countries where social control is more vigorous and the question may be asked how far the arguments against compulsory notification and penalisation of the delinquent are still valid There are nowadays so many incursions into the personal liberty of the subject that it is by no means certain that the provision of limited powers to coerce the infectious defaulter or the neglectful parent would cause resentment A clue to the popular feeling on this point was provided a short time ago In 1934 a questionnaire[2] was submitted to patients attending the Salford municipal clinic for the treatment of venereal diseases, inviting expressions of opinion on two points (1) Should a person suffering from a venereal disease be compelled to receive treatment, provided it is given confidentially and free ? (2) Should the parents or guardians of children suffering from venereal disease be compelled to have such children treated under the same conditions ? In reply to both questions there were 429 ayes and 5 noes The opinion among this group of infected people was thus overwhelmingly in favour of some form of compulsion

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[1] Amer J Syph July 1936 Part 2

Nevertheless, in considering the coercion of non-coöperative or defaulting patients we must not risk losing all that has been gained by the persuasive approach The risk is that minatory regulations will drive the disease underground, and this risk is far greater in England than, for example, in the Soviet Union where venereal diseases are regarded as diseases like other diseases and nobody thinks the worse of a man because he contracts them The conditions are really not comparable But in England and Russia alike the object must be to make the patient realise how much he stands to gain by cure, and a useful illustration of this comes from the social service department of the University of Pennsylvania,[3] where there has been complete freedom to experiment in what Louise Ingraham calls " technics of persuasion " Here as in many other places the aim has been to obtain from the syphilis patient his voluntary disclosure of recent sexual intimates and his services in personally recruiting them for medical examination On this basis persuasion was 92 per cent effective when the individual contact could be personally reached, and this success was independent of the type of community, whether black or white, well to do or indigent Of 201 patients with syphilis it appears that 114 of them identified 174 exposures, being an identification rate of 1 5 contacts per productive case Possibly, the author admits, a more aggressive technique would give greater immediate reward, but at the same time it would almost certainly sacrifice future gains Father O'Flynn, who had a way with him, did however sometimes coax the lazy ones on with a stick

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[2] City of Salford V D Scheme Annual Report, 1934, p 14

[3] *J Amer med Ass* Dec 12th, 1936 p 1990

ANNOTATIONS

GREAT ALTITUDE

AT a time when the sport of mountain-climbing is attracting every summer a larger crowd of devotees especially in England and Germany, any sound research into the medical aspects of great altitude must have a practical interest A more serious importance comes from the growing conviction that aeroplanes are likely to fly at increasingly greater heights, and the recognition of anoxæmia as a factor in pulmonary and circulatory disturbances

On the firm foundations built at Oxford by Haldane, Douglas, Priestley and their co workers, there is arising a superstructure, much of the work on which has been done in America It is possible that there is lacking in the United States the coördinating influence of Barcroft over the Cambridge school But the Americans are fortunate in having high mountains near at hand, a circumstance which has given to much of their work a very practical bent Somervell Raymond Greene, and others in this country have written of the digestive disturbances and failure of appetite accompanying the many efforts which have been made to climb Everest Recently working in a steel chamber, Van Liere[1] has shown that at only 14,000 feet there is an average prolongation of the emptying time of the stomach of 35 per cent the least susceptible subject showing a prolongation of 13 2 per cent The delay is caused by a loss of motility, which may be due to the increased output of adrenaline during anoxæmia It will be recalled that medical officers of various Everest expeditions have laid stress upon loss of appetite as a possible factor in the degeneration noted after prolonged residence above 20,000 feet, but it has generally been held that its influence was not the paramount cause From this point of view, the new work of Talbott and Dill,[2] of Harvard, is of importance They describe a disease, first reported by Monge, and named after him, which develops after residence over many years at such altitudes as 15,000 feet It seems probable that though Monge did not observe it in anybody who had lived in the highlands for less than two years, it might appear much sooner at a greater altitude Talbott and Dill give as its symptoms headache, hoarseness, loss of appetite, weakness, paræsthesiæ, and transient spells of stupor, and, as its signs, cyanosis, pigmentation, generalised vasodilatation, and hypotension Some, though not all, of these signs and symptoms have been observed in climbers suffering from altitude deterioration The exact ætiology of the disease is unknown, and in discussing it Talbott and Dill pay, perhaps, too little attention to the work of Argyll Campbell

The time seems ripe for trying to elucidate this and many kindred problems of growing importance Everest was almost climbed in 1933 In 1936 through no fault of the climbers, the expedition was a fiasco A repetition of this fiasco, due to weather conditions, can never be excluded Yet if the last expedition had included a scientific programme it would have produced some solid return for the many thousands of pounds expended It is not enough that the medical officer should pursue a line of research of his own he is usually one of the climbers he has a gigantic responsibility for the health of the party which must absorb most of his mental energy and he may even himself be suffering from the clinical abnormalities which he is attempting to describe If the necessary separate fund can be raised the next Everest expedition should take in its train an independently financed scientific group This should include not only physiologists but clinicians as capable as the medical officers of past expeditions of observing the reactions of their companions to the abnormal environment but like Lord Nuffield's professors freed from the responsibilities of practice

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[1] Van Liere F J (1936) *Arch intern Med* 58 130

[2] Talbott J H and Dill D B (1936) *Amer J med Sci* 192 626

VARIATION IN ANIMAL VIRUSES

VARIATION in filtrable viruses has been known nearly as long as the viruses themselves Almost before the conception of filter passing viruses had taken shape and certainly before it was generally recognised Pasteur demonstrated that a variant of the virus of rabies could be produced, and as every one knows employed it in the prophylaxis of human infection The adaptation of the virus of small pox to growth in the tissues of the calf resulting in the fixed variant vaccinia also belongs to the early history of viruses And since that time especially in the last decade many more examples of virus variants have been brought to light Some of these have been discovered more or less by accident—for example the necrotic variant of Shope's rabbit-fibroma virus—but most have been sought intentionally often with specific prophylaxis in view

In a long and well-documented paper the whole question of variation in animal viruses has lately been reviewed at length by Findlay[1] Much of Findlay's work on viruses has been concerned with the production of variants and a study of their properties so that he is peculiarly fitted to write such an article and he has done it extremely well Starting with an enumeration of all the available facts concerning virus variants he briefly reviews our knowledge of variation in multicellular and unicellular organisms and finally considers the application of this to viruses Naturally it is harder to study variation in viruses than in multicellular organisms or even unicellular organisms like protozoa for viruses cannot be cultivated apart from living cells As yet it has not been found possible to raise strains of virus from a single virus particle and there appears little likelihood of viruses possessing a demonstrable nuclear apparatus thus making it impossible to distinguish between Lamarckian and genetic variation Nevertheless as Findlay points out the available evidence suggests that there is no fundamental difference between variation in viruses on the one hand and in unicellular and multicellular organisms on the other It is true that the absence of any demonstrable mechanism whereby hereditary characters are transmitted such as exists in higher plants and animals makes the application of the term mutation to some virus variants incorrect and in order to overcome the difficulty it has been suggested from time to time that viruses are themselves genes that they have arisen from higher forms and that as the result of highly specialised parasitism all structure and function other than that associated with the hereditary characters has been lost This however is pure hypothesis with little to commend it and it seems more reasonable to assume that in such primitive forms of life as viruses any such specialised medium for the transmission of heritable characters has not been developed That viruses are living things is strongly supported by the fact that they exhibit this phenomenon of variation Indeed as Findlay says in his conclusions it is hard to explain the facts except by regarding viruses as organised living entities But interesting and important though this aspect of variation in viruses may be there is an eminently practical side to it Virus variants have proved their value in the active immunisation against virus infections; in recent years we have seen them used with success in the prophylaxis of yellow fever and horse-sickness and no doubt the near future will provide further examples It is this side of the problem quite apart from the academic one which will ensure adequate attention being paid to this interesting question of variation in viruses

THE SAFETY OF PREMEDICATION

THE use of formidable accessory agents given before the anæsthetic proper is so frequent at the present time that it is important to know what if any disadvantages may accompany the many undoubted benefits which the practice confers on most patients. Dr Dawkins in order to determine the answer to this question contrasts[1] two series of patients, the first operated on between 1921 and 1925 and the second between 1931 and 1935 Each series comprised more than three thousand operations, and altogether he has for his study analysed the histories of over 16 000 anæsthetics given at several London hospitals and in private practice Conclusions drawn from a study of this dimension are worthy of serious notice and perusal of this little work gives information with regard to almost every complication that has been associated with anæsthesia. The matter is well arranged and tabulated so that the author's findings are easily perceived His final conclusion is that during the last five years definite progress has been made towards the reduction of anæsthetic complications Injudicious use of basal narcosis however increases the risk of pulmonary troubles. Some of the figures in the many tables provide an interesting study Generally speaking they agree with commonly held opinion both as regards mortality and morbidity For example the hope that spinal anæsthesia might save patients from lung trouble not infrequent after inhalation a hope long since dissipated is here again shown to be without foundation Pulmonary morbidity is shown by the author at 11 5 per cent after spinal anæsthesia and at 5 9 per cent after ether Chloroform shows the same pulmonary morbidity as ether but the number of patients is so small that much value cannot be placed on this conclusion

CATGUT SENSITIVITY

THERE are still many problems that await solution in the use of catgut as material for ligatures Examination of a wound that has broken down occasionally reveals absorption of the catgut in a fraction of the time stated by the manufacturers Local reaction to the presence of the catgut also occurs most unexpectedly in some presumably clean wounds followed either by delayed healing or by disruption Dr C J Kraissl of New York has thrown light[2] on these problems by his investigations into defects in the structure of catgut and by his demonstration of the possibility of catgut sensitivity Using a carefully constructed apparatus he tested the absorption time of various specimens of catgut Occasionally a strand of catgut was absorbed within a few hours instead of taking its usual time of several days Examination of specimens of catgut revealed that fraying of the strands at the sites of bends occurred In other samples comparatively large foreign bodies of some apparently amorphous material were found twisted into the gut Such defects may obviously alter the rapidity of digestion in the tissues, and Kraissl considers that each strand as used should be examined Packing of catgut in small glass tubes he regards as unsatisfactory The dehydration of catgut which is necessary to render it boilable has two disadvantages It leads to more ready absorption in the tissues, and it decreases the flexibility of the product For these reasons Kraissl thinks we should be content with non boilable gut, and with sterilisation of the gut in the glass tube by germicidal solutions Chromicised gut is largely used Intradermal tests have shown that some patients are sensitive to chromic acid and this may account for failure of healing in certain instances Sensitivity to the protein of the catgut itself may be an even more important factor Kraissl has actually sensitised guinea pigs and subsequently obtained disruption of wounds sutured with catgut He suggests that in the human subject a previous operation is sometimes the sensitising process By cutaneous tests he found that allergic patients were quite often sensitive, in a series of patients tested the highest incidence of sensitivity was in a group who had presented disruption of wounds He suggests that, if catgut is to be used in individuals who have a history of allergy, previous operations, or exposure to chromic acid, appropriate skin tests would be a useful safeguard.

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[1] Findlay G M (1936) J R micr Soc 56 213

[1] On the Incidence of Anæsthetic Complications and their Relation to Basal Narcosis By C J M Dawkins M A M D D A London: John Murray [illegible]

[2] Surg Gynec Obstet November 1936 p [illegible]

A WORLD ENCYCLOPÆDIA

FROM the bacillus which turned animals blue to fighting aeroplanes Mr H G Wells has foreseen so much which at the time seemed impossible that his latest proposal will be received with respect as well as interest It is nothing less than a series of volumes in which the ordinary citizen would, without any great toil or difficulty, find in clear understandable language, and kept up to date, the ruling concepts of our social order, the outlines and main particulars in all fields of knowledge, an exact and reasonably detailed picture of our universe, a general history of the world, and references to the primary sources of knowledge[1] With the reasons which have led him to suggest this enterprise and their validity everyone will be in sympathetic agreement We live, he says, in a world of unused and misapplied knowledge and skill, and those who are mainly responsible for modern knowledge are often dismayed to find it so ineffective, those who direct the affairs of the world do it without having the relevant information and even without making use of what they do know To cure or at any rate alleviate the trouble he says that we must bring together an account of what is known which shall be available to everybody He is, rather unjustly, a little contemptuous of what has already been done in the way of encyclopædias they are collections of disjecta membra without the coherence which is needed for adequate synthesis and the articles may be neither authoritative nor impartial He wants statements which have been agreed to by representative experts under the guidance of an ad-hoc body which might be called the Encyclopædia Society that would be responsible for getting the necessary revisions made and published and indeed for persuading divergent opinions to come to some agreement The substance of the book would, we gather, be as much quotation as fresh writing It seems indeed that Mr Wells contemplates the extension of his own 'Outline of History" to all knowledge, but the only indication he gives of the scale is the remark that the ordinary citizen might have the encyclopædia in his own home

For a common man it is difficult to take such a panoramic view as seems to come easily to Mr Wells and most of us will naturally think of his proposal with reference to our own special subjects Medicine is a comparatively narrow field, and it is cultivated with an interest and diligence which are possibly rather exceptional. But even here everyone will agree that synthesis would improve the situation, physicians, surgeons, gynæcologists, and the rest keep fairly well in touch with one another through hospitals, journals, meetings, and patients But how do they maintain contact with biology, physics, physiology, and the other institutes of medicine? And when it comes to making medical knowledge effective in daily life we surely see many gaps and much delay, not the fault of the specialists who know but of those who have to try to guide the horrid tangle of social life It seems as near certain as may be that diphtheria is preventable, yet 36 persons died of it last week it seems clear that people would be better if they drank more milk, but the Milk Marketing Board has led to their drinking less, and so on The rational external observer would probably be surprised that the annual report of the Registrar General, which he might well surmise would be their bible, is not a best seller among medical men But it is unnecessary to elaborate by instances an obvious truth of which the medical profession is well aware they deplore the necessity of so many specialists and the rarity of the general physician who is so useful to patients and they do what is possible to extend the curriculum

It is not however with the position within any group such as medical men that Mr Wells is chiefly concerned, inside the profession synthesis and application are in fact not badly done or at least done better than they might be or used to be But where is a doctor to turn if he wants to know about the causes of poverty, the economics of poultry farming, the nature of X rays, the technique of bread making, the history of roads, the influence of John Wesley, coal and how best to use it? He may well want to do so apart from any natural curiosity, for they are all capable of having paramedical bearings The answer is that he will find most of what he wants in any decent encyclopædia and the rest in an efficient public library, there will likely be a small residuum which he will not find at all because the answer to his particular question is not known It would naturally save him a little trouble if he could turn to his copy of the World Encyclopædia, but however complete that might be we doubt whether Mr Wells's main object would be achieved by its provision The difficulty is not that the information is not in print, but that people will not, or at any rate do not, read it, and his campaign, even if it is not delivered of the encyclopædia, will do good by stimulating a certain number to overcome their reluctance to know what they are about But he also has to meet the difficulties that most people unlike himself prefer details to generalisations and that they greatly mistrust the agreed statements of specialists as bases of action as indeed they have reason to do Mr Wells thinks that man is in danger and that unless he does something to pull his mind together his condition will be desperate It may be so but man has a wonderful capacity for getting out of queer situations and he generally prefers to go his own irrational way The present is not as different from the past as many people think; as in so many difficulties a change of heart is wanted more than a change of technique, and a disinterested reincarnation of the Encyclopædia Britannica would go a long way to nourish it.

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[1] A Friday Evening Discourse to the Royal Institution Nov 20th 1936 printed in *Nature* for Nov 28th The thesis of this discourse is taken from The Anatomy of Frustration a Modern Synthesis (London The Cresset Press) in which Mr Wells pretends to have found the draft of such a World Encyclopædia and considers its merits

ARTIFICIAL PRODUCTION OF ERGOT

A PROCESS which has been invented and patented in the United States is not only of scientific interest but promises to be of commercial importance For nearly two years past there has been a world shortage of ergot of rye due in the 1935 season to the failure of crops in Spain Portugal and Russia, and in the 1936 season to the civil war in Spain where the larger part is produced Not only have prices advanced to more than four times the normal figures but supplies have at times been so difficult to obtain in adequate quantities that makers of the active principles have found it difficult to keep pace with the demand It is understood that the new substance is a result of the discovery that *Claviceps purpurea* in saprophytic culture develops the active principles which are present in extracts made from the natural sclerotia. Extracts from this artificially produced ergot have the physiological activities and therapeutic value of extracts made from the natural ergot of rye

MEDICAL LIVERPOOL

BRITAIN says Trevelyan has always owed her fortunes to the sea and to the havens and rivers that from the earliest times opened her inland rivers to what the sea might bring To the little market town and coastal port of Liverpool with a population of but 2000 in the seventeenth century it brought the rich trade with the West Indies, the gains of smuggling with the Spanish colonies and the almost fabulous wealth of the traffic in slaves which the kindly merchants of the town delicately called the African trade By the middle of the eighteenth century the population had increased to 18 000 and soon Liverpool was to be the first slaving port of Europe; and in 1740 the newly built Royal Infirmary was officially opened by Edward Earl of Derby But history is not altogether the mechanical unfolding of economic processes and it is good to be reminded that it is made by ordinary day to-day people A Medical History of Liverpool from the Earliest Times to the Year 1920 ' [1] touches general history at an interesting angle even though it is primarily a detailed record of the activities of a town's medical men and nurses and their lay associates It is a lively book to read—as serious as humdrum, as entertaining and as varied as medical life always is Men built hospitals administered them founded a medical school, drove in their carriages practised their craft There were wars murders famine and pestilences Quacks sold their nostrums built rich houses gave their names to streets. Body snatchers were caught and sent to prison and members of a learned society passed a resolution in favour of an alteration in the law so that bodies might properly be available for dissection Throughout the story the tang of the sea blows in—Hugh Owen Thomas practises his orthopædic methods on countless dock labourers and ships workers and diseases peculiar to foreign lands touch the port so nearly that a school of tropical medicine is born

One of the arguments originally put forward in support of the establishment of a medical school in the town was so that the erroneous and popular opinion that there is a great want of clever medical men in Liverpool—so universal in London and current everywhere—will then be satisfactorily refuted We shall then cease to be inundated with such shoals of Welshmen Irishmen and—last and worst of all—Scotchmen.' The latter hope was not realised; and to-day all concede to Liverpool admiration for great accomplishment.

THE SPECIAL AREAS

THE third report of the Commissioner for the Special Areas (England and Wales) [1] is primarily concerned with economic reconstruction in the areas but problems and measures affecting the health of the communities come up incidentally Long continued unemployment in an area may impair health directly or indirectly The direct relation is all too obvious two methods of indirect causation emerge from the report. In the first place while transference is accepted as inevitable and indeed desirable the fact is recognised that it tends to drain an area of much of its best stock: The policy of transfer has a dual nature It provides positive gain for the unemployed man who has the enterprise to start life afresh in a more prosperous district but it has a negative reaction on the special areas through the loss of many of their best men and youths In the second place financial stringency handicaps the work of the local authorities concerned ' The high rate burden and the constant anxiety of local authorities about the means of meeting increasing liabilities with a falling income are steadily undermining the standards of service provided. Merthyr Tydfil has a rate of 27s in the £. An examination of the mortality figures was made for the Commissioner and he states I was much relieved to find that the statistics do not indicate an abnormal situation it must be borne in mind" he adds that these statistics do not tell the whole tale It would be fallacious to assume from them that there is no deterioration in the health of the average man who has suffered a fairly long period of unemployment Personal observation leads me to the conclusion that there is some degree of deterioration of condition in most of such men The financial difficulty of the local authorities in meeting any extension of social and sanitary services has been eased by grants up to 75 per cent of the total cost Such grants have been made towards mental hospitals, voluntary hospitals child welfare centres district nursing open-air nurseries physical training cookery classes a cheap milk scheme in the Rhondda district improvements in water-supply sewage disposal and closet conversion It has been possible for example to provide 27 additional district nurses for the Durham and Tyneside area and 63 in South Wales This report throughout conveys a sense of the human tragedy involved: its most poignant paragraphs deal with unemployment among young persons (Part X) Its perusal will quicken the interest and sympathy of those already familiar with the special areas, and should stimulate others to an awareness of the position

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[1] From data collected by T H Bickerton partially prepared by Miss May McKisack and edited by H R Bickerton and R M B MacKenna London: John Murray 1936. Pp 313 21s.

[1] H.M Stationery Office, Cmd 5303. 1s 6d

LONDON WATER

THE Metropolitan Water Board has many notable achievements to its credit Not the least is the wisdom it has shown in selecting directors of water examination who can write Houston always had something to say, and said it, and Lieut Colonel C H H Harold is a worthy successor In this respect and in the absence of acrimony and special pleading, the whole series of annual reports differs greatly from those of the three eminent chemists retained by the eight water companies whose undertakings were taken over thirty years ago The task which the Board has set itself—to supply one standard of water only, coliform organisms absent in 100 ml —is no easy one That may be easy enough for undertakings drawing their raw water from upland sources well away from and for the most part above human habitations, but when the sources are rivers passing through large and populous towns, and wells in districts which are suburban rather than rural, it is only by unremitting watchfulness that such an aim can be reached

The work of the Board's laboratories[1] is divided into three sections—bacteriological, biological (or planktonic), and chemical In the bacteriological section an experiment into the possible multiplication of *B coli aerogenes* and other organisms in cisterns and filter beds was conducted

> It was found that filtered Thames water initially containing no coliform organisms in 100 ml and giving an agar count of 30 colonies per ml , kept in a plugged and covered bottle, yielded a considerable increase of saprophytes in 24 hours, which gradually disappeared after 5 to 6 weeks, but no aerogenes The same water inoculated with either aerogenes, communior, grünthal or communis (from 270 to 410 per ml) yielded no aerogenes or communis in 2 weeks and no communior or grünthal in 3 weeks Treated with ozone and similarly inoculated, the aerogenes and grünthal disappeared in 2 and the others in 3 weeks In these samples as in the control saprophytes appeared, and after a few weeks disappeared When sterilised with chlorine so that no residual sterilant was present after 24 hours, saprophytes did not appear, and communior disappeared in 3 weeks, but aerogenes persisted for 10 weeks and grünthal and communis for 7 weeks The same water boiled yielded no saprophytes, but aerogenes increased from 270 to 40,000 in 5 weeks and disappeared in 27 weeks whilst the other organisms were not found after 5 or 6 weeks The water again became negative to MacConkey in from 2 to 30 weeks, the best times being given by the ozonised group

It would appear Colonel Harold remarks, that the viability of coliform organisms is influenced largely by the presence and multiplication of saprophytic survivors, and the extent to which these prevail depends largely upon the efficacy of the initial process of disinfection employed, although there may be other contributory factors

The biological section of the report is of great interest and it appears that Colonel Harold intends to develop a branch of water examination which has been somewhat neglected in this country although Houston and Mr Wilfred Rushton D Sc among others have done useful work Fresh water plankton has been studied more intensively in the United States and Central Europe than in most other countries Colonel Harold gives photographs of a plankton net and sampling bottle regularly used on a motor launch on the Queen Mary Reservoir For reasons which are not clear, lakes and reservoirs are richer than rivers in both phyto and zoo plankton The fact that there are few lakes of any size in this country and that these are relatively far from seats of learning may account for the slow development of ecological as distinguished from morphological studies of fresh water plankton in Great Britain The Freshwater Biological Association of the British Empire in February, 1932, opened a laboratory at Wray Castle on Windermere for the study of that lake On the balance of these two classes depends the probability of trouble arising from unusual tastes and smells or from the blockage of filter beds The vegetable plankton develops from spores by photosynthesis, the carbon dioxide of bicarbonates supplying what carbon is required, whilst nitrogen and mineral constituents are obtained from nitrates and other salts dissolved in the water As the algal flora develops pasturage becomes available for the animal population Increase of both kinds of plankton can go on until the least plentiful plant foods are exhausted in the water, these seem to be silicates, phosphates, and oxidised nitrogen (nitrates and nitrites) The development of the phytoplankton is also dependent on the effective penetration of the water by sunlight, hence a rather complicated seasonal variation occurs

The study of plankton seems already to be enabling its control by algicides, such as copper sulphate alone or combined with chloramine, to be put on a sounder basis, and should do much to remove the troubles to which Houston so often referred The chemical section, too, is devoting attention to the determination of those minute amounts of constituents which are limiting factors in the growth of plankton

CAUSES OF STERILITY

AMERICAN medicine, with its capacity for organisation, has gone further than the rest of us in the treatment of the childless marriage, and a symposium appearing in the *Journal of the American Medical Association* for Dec 5th is valuable as reflecting present opinion in the United States The first contribution is by S R Meaker, who has done more perhaps than any other physician to call attention to the need for really careful investigation of both husband and wife if children are wanted and have failed to appear In at least 70 per cent of cases of human sterility the cause is not some single abnormality but rather the summation of several factors Some of these may be genital and some may be constitutional, and they are seldom limited to one partner Meaker and his associates state that only about 10 per cent of the husbands and 5 per cent of the wives that consult them for childlessness are free from all objectively demonstrable evidence of infertility In women the four most important gynæcological abnormalities are genital hypoplasia, abnormal viscosity of the endocervical secretions, partial or complete obstruction of the Fallopian tubes, and faulty ovulation The most difficult of these to detect is the last, for no method of examination has been devised that will show whether or not the ovaries actually liberate mature and normal eggs In treatment Meaker would have us correct every factor demonstrated as inimical to fertility A therapeutic approach from several directions gives results far better than those obtained in older days when attention was directed only towards single items. Of these, one of the most important is of course examination of the semen and R S Hotchkiss points out that this is now done not so much to detect absolute sterility as to provide an estimate of the degree of fertility of the male partner This he assesses according to the total volume of the ejaculate *the motility of the spermatozoa the pH of the* semen the number of spermatozoa present and their appearance and the ratio of abnormal to normal forms present Dealing with the operative treatment of sterility in the male, F R Hagner maintains that the use of fine silver wire as a suturing material is an important factor in the success of his modification of the original Martin operation of baso epididymostomy The other points that he brings out are the necessity of ensuring that spermatozoa are present in the head of the epididymis and that the lower end of the vas is patent before carrying out anastomosis The symposium concludes with a consideration of endocrine factors by Richard Chute Inadequate function of the anterior pituitary, the ovary and the thyroid may any of them he says be mainly responsible for sterility Hypopituitarism is the commonest dysfunction recognised and the use of anterior pituitary hormones is most often advisable but thyroid extract may also be very useful According to Chute the injection of gonad substances—i e substitution therapy—not only does not stimulate the gonads but is liable to injure them

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[1] Metropolitan Water Board thirtieth annual report By Lieut -Col C H H Harold M D D P H director of water examination London P S King and Son Ltd Pp 101 10s 6d

THE DANGERS OF BEING ADMITTED TO A CHILDREN S WARD

THAT a young child may suffer more from the effects than from the cause of admission to hospital has given much anxiety to those in charge of children s wards, particularly in fever hospitals Though it is still impossible entirely to prevent the common but dangerous infections much can be done to reduce them by having an efficient staff by the better planning and ventilation and the greater subdivision of wards and by passive immunisation A leading article in our own columns a few years ago[1] was followed by an illuminating correspondence about the abolition of unnecessary risks The result of treating pyloric stenosis was instanced by J C Spence in Newcastle-upon Tyne and by D Paterson in London in private practice a mortality of 1–10 per cent was to be expected while in hospital with a highly skilled staff it might exceed 30 per cent Later in his Milroy lectures for 1935 E H R. Harries[2] spoke of the overwhelming importance of upper respiratory tract infections the need for a staff numerically and technically adequate to cope with their special dangers and the reforms required in architecture and administration While some still believe that well planned large wards can be efficient as well as economical the majority have as an ideal the small ward unit with one or two beds in each cubicle as in Hutinel s boxes famous since the beginning of the century In these a ward was subdivided by glass partitions into two bed cubicles each with its own window and equipment. This method will prevent all infections except from the early stages of measles and especially of chicken pox for which complete separation and a epsi would be necessary In an ordinary ward the simple barrier system of isolation is effective as described recently by C C Okell and S D Elliott[3] Prevention largely depends on the space between beds but even with the regulation three feet B F Schlesinger found[4] that the simple expedient of placing beds alternately from head to foot was alone enough to ensure that cases remained sporadic which in the past would have led to minor epidemics Better recognised than droplet infection although no less to be feared is the gastro enteritis of infants which can only be avoided by the efficiency of the nursing staff As D Nabarro and A G Signy have suggested[5] the most important precaution is a staff large enough to ensure that no nurse is responsible for more than one or two patients that no nurse should handle stools who has to prepare meals and that the working hours should not be so long that standards are relaxed

At his hospital in Paris Prof Robert Debré has organised a special service for the prevention and detection of cross infection and has put at its head a whole time medical officer with special clinical and laboratory qualifications for his task Largely owing to his initiative a special committee was appointed by the Academy of Medicine to study the problem and the Academy have now passed certain resolutions embodying its principal findings Separate cubicles, they recommend should be adopted by all children s hospitals. In addition steps ought to be taken to prevent contacts in the special departments among the young in patients and between these and children coming from the outer world As Prof Debré pointed out the meeting of children at these cross roads is a most pernicious source of intra hospital infections Stricter measures than heretofore are to be taken in the prophylactic discipline imposed on the nursing and medical staff and on medical students It is essential for these to wear overalls and masks and to be forbidden indiscriminate access to the cubicles of particularly delicate infants Visits by relatives should also be forbidden in infants wards, and should be strictly regulated in the wards of older children In out patient consultations suspect children should be more effectively combed out if necessary by the addition of a supplementary intern. It is particularly recommended by the Academy that all in charge of children s hospital should imitate the reforms already introduced into Prof Debré s hospital where lately the incidence of infections has been greatly reduced

PUBLIC SOCIAL SERVICES

ANYBODY who has the time and inclination to read through a little handbook issued by the National Council of Social Service and now in its seventh edition[6] will be left with a sense that if all local authorities exercised to the full their powers permissive and obligatory no member of the community need ever go uncared for from the cradle to the grave Provision and generally very humane provision, is made for nursing and expectant mothers for infants and children for physical and mental defectives, the destitute the sick and the disabled the aged and the hungry and indeed for every citizen whose circumstances genuinely call for assistance In some cases Scotland is ahead of England for example while education authorities in England may provide meals for needy school-children *at their* discretion in Scotland such provision is laid upon the authorities as a duty and the same is true *of the*

Lancet, 1933 1 370

Ibid 1935 2 173 233

Ibid 1936 2 838

Ibid 1933 1 611

Ibid p 650

From the Council at 26 Bedford-square London, W C 1 Pp 164 2s (post free).

provision of certain kinds of secondary education. The handbook was originally published as a pamphlet in 1917, was revised and enlarged in 1920, and has now again been revised and brought up to date. Besides a comprehensive survey of the social services, including national health and pensions insurance, it contains in concise form an immense amount of information about conditions of industry and employment, the administration of justice in the various courts and a chapter on war pensions and allowances. While the handbook must be invaluable in the offices of public health departments and the various government departments engaged in administering the social services, there will be many other workers, both official and voluntary, who will find it a very useful work of reference.

EXERCISING THE LIVER

It may be contrary to the general rule of rest in active disease to exercise a damaged organ, but it is not necessarily so in all types or at all stages. Since much visceral activity appears to be rhythmical, there is certainly physiological support for applying the principle of alternate rest and work to certain diseased tissues. Prof Pribram has suggested an interesting and novel therapeutic method, based upon his work on liver cell function, in which rhythmic rest and work can be made to improve functional activity in an organ like the liver. From his study of hepatitis, both with and without gall bladder disease, he believes œdema of the liver, to which a great part of the clinical enlargement is due, to be an important feature of these conditions. The improvement noticed after intravenous injections of hypertonic glucose solutions is due not so much to the action of the glucose itself as to the withdrawal of fluid by osmosis from the liver depôts, for a similar diminution in size can be obtained by using hypertonic saline. Many livers seriously diseased, as in cirrhosis, and with grossly impaired function, are not deficient in glycogen, and treatment with glucose, with or without insulin, must clearly have its limitations. For one thing the optimum benefit is likely to be reached quickly, since a liver deficient in glycogen will quickly replenish its stores under treatment, and further improvement in function may cease when maximum storage is reached. In the hope that certain types of liver disease, especially cirrhosis, might respond to stimulation as well as to "protection" by glucose, Prof Pribram has tried the effect of alternately increasing and diminishing glycogen activity—and perhaps other activities—by using insulin and thyroxine on different days. The anabolic or resting phase is produced by the injection of 20 c cm of a 40 per cent glucose solution with 8 units of insulin, the katabolic phase by 1 c cm of 1/1000 thyroxine solution intramuscularly. By these two opposing treatments he believes that the functional activity of the liver cells is raised, and from his results it seems that his hopes are well founded. As one means of estimating the effect of this "Zell-gymnastik" Prof Pribram has studied the water balance in cases of cirrhosis of the liver, and the diuretic effect of the treatment appears greatly to outweigh that produced by either insulin glucose treatment alone, or any other method he has tried, including of course such mercurials as Salyrgan. In general Prof Pribram has applied these original methods to cases of liver œdema and enlargement, but he suggests that the principle involved may be applied to other organs and other diseases. This work is one that will arouse interest and it should lead to further research. Clearly criticisms are not hard to make, but at least it may help in questioning the view that all rest and no work must be the best treatment for diseased viscera.

A WORD TO CONTRIBUTORS

NATURE of her abundance is always creating new varieties, new species, new methods; with every passing year each animal and plant tends to become less like its ancestors and less like its cousins. The same thing happens to scientific journals; they grow different in appearance and they eat different food. This is awkward for those who feed them, and contributors are often heard to complain, for example, that a form of references demanded by one journal will be rejected with contumely by another. In these circumstances the publications committee of the Royal Society has been trying to devise a basal diet that all will accept, and has been asking editors in this country to give up some of their peculiar fads and adopt henceforward the Harvard System of Bibliographical Reference, with whatever local modifications may be necessary to make it palatable. This we have done at the beginning of the New Year, and we have taken the opportunity at the same time to issue a small supplement, "On Writing for THE LANCET," which we hope may be useful as a cookery manual for those who obligingly keep us alive.

FURTHER EXPERIENCE WITH DIVINYL ETHER

DIVINYL ether, vinethene, has not been used by anæsthetists long enough for its exact value to be clearly demonstrated. The publication of the paper concerning over 2600 administrations is a step towards this end. In *Anesthesia and Analgesia* for September–October, 1936, G W Black makes plain both the limitations and the peculiar advantages of the drug. It is obvious that, as was anticipated, vinethene unaided is not a good anæsthetic for long operations requiring full relaxation. Black disapproves of it in these conditions because of its extreme volatility and the difficulty in consequence of preserving a level plane of narcosis. Other authorities have disliked long administrations because of their anxiety about untoward effects on the liver—though Wesley Bourne has shown that, experimentally at least, these fears are groundless. On the other hand for short-operations vinethene has many attractions. It is remarkably quick in its action, is not nearly so irritating as ethyl ether, and produces better relaxation than nitrous oxide, recovery being almost as quick and complete. Experience is needed before the best can be got from vinethene, especially as the signs of anæsthesia are not precisely the same as those usually relied on; for example, anæsthesia may be perfect with a rolling eyeball and an active lid reflex. It has to be given with very free dilution by air or oxygen, and it is admirably adapted for the induction of anæsthesia in children.

Dr Harrington Sainsbury, who died on Dec 20th in his 84th year, was consulting physician to the Royal Free and City of London Hospitals. He took a lifelong interest in the action of drugs and the principles underlying their administration, and wrote on the subject with charming erudition.

A SPECIAL conference of local medical and panel committees has been called for Jan 7th to discuss the capitation fee payable for young persons to be brought under National Health Insurance by the Government's new legislation (see THE LANCET, Dec 5th, 1936 p 1340). A note on the proposals appears on p 60.

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[1] Pribram, B. O (1936) *Münch med Wschr* 83 1993

PRINCIPLES OF MEDICAL STATISTICS

I —THE AIM OF THE STATISTICAL METHOD

Is the application of the numerical method to the subject matter of medicine a trivial and time-wasting ingenuity as some hold or is it an important stage in the development of our art as others proclaim ?

WHATEVER may be our reactions to that question propounded by Prof. Major Greenwood in these columns[1] fifteen years ago it must be admitted that in the years intervening between 1921 and to day there has been a substantial increase in the number of papers contributed to medical journals of which the essence is largely statistical Not only does there appear to be an enhanced knowledge of and respect for the national registers of life and death which the Registrar Generals of the United Kingdom annually publish and analyse but there is an increasing number of workers who endeavour to apply numerical methods of analysis to their records obtained in clinical medicine The great majority of such workers however have had, naturally enough little or no training in statistical method and many of them would find the more mathematical methods of the professional statistician as has been said obscure and even repellent Often enough indeed the argument is put forward that the use of such mathematical methods is quite unjustifiable that the accuracy of the original material is not sufficient to bear the weight of the treatment meted out to it This assertion is not strictly logical If a collection of figures is worth a statistical analysis at all it is obviously worth the best form of statistical analysis—i.e the form which allows the maximum amount of information to be derived from the data

Whether mathematical statistical methods *are* the best form in particular cases or may be regarded as an unnecessary elaboration must turn rather upon this question : Can we in any of the problems of medical statistics reach satisfactory results by means of relatively simple numerical methods only ? Or upon this question Can we satisfactorily test hypotheses and draw deductions from data that have been analysed by means of such simple methods ? Personally I believe the answer to these questions is an unqualified yes, that many of the figures included in medical papers can by relatively simple statistical methods be made to yield information of value that where the yield is less than that which might be obtained by more erudite methods which are not at the worker s command the best should not be made the enemy of the good and that even the simplest statistical analysis carried out logically and carefully is an aid to clear thinking with regard to the meaning and limitations of the original records If these conclusions are accepted the question immediately at issue becomes this : Are simple methods of the interpretation of figures only a synonym for common sense or do they involve an art or knowledge which can be imparted ? Familiarity with medical statistics leads inevitably to the conclusion that common sense is *not* enough Mistakes which when pointed out look extremely foolish are quite frequently made by intelligent persons and the same mistakes or types of mistakes crop up again and again There is often lacking what has been called a statistical tact which is rather more than simple good sense That tact the majority of persons must acquire (with a minority it is undoubtedly innate) by a study of the basic principles of statistical method

It is my object in these articles to discuss these basic principles in an elementary way and to point out by representative examples taken from medical literature how these principles are frequently forgotten or ignored. I very much fear that the discussion will often appear too simple and that some of the mistakes to which space is given will be thought too futile to need attention I am only persuaded that such is not the case by the recurrence of these mistakes and the neglect of these elementary principles a feature with which every professional statistician is familiar in the papers submitted to him by their authors for counsel s opinion.

Definition of Statistics

Whereas the laboratory worker can frequently exclude variables in which he is not interested and confine his attention to one or more controlled factors at a time, the clinician and social worker have to use records which they know may be influenced by factors which they cannot control but have essentially to be taken into account. The essence of the statistical method lies in the elucidation of the effects of these multiple causes By statistics therefore we mean quantitative data affected to a marked extent by a multiplicity of causes and by statistical method methods specially adapted to the elucidation of quantitative data affected by a multiplicity of causes (G U Yule: An Introduction to the Theory of Statistics 1927) For example suppose we have a number of children all of whom have been in contact with measles and to a proportion of them is given an injection of convalescent serum We wish to know whether the treatment prevents the development of a clinical attack. It is possible that the risk of developing an attack is influenced by age by sex by social class and all that that denotes, by duration and intimacy of contact by general state of health A statistical analysis necessitates attention to *all* these possible influences We must endeavour to equalise the groups we compare in every possible influential respect except in the one factor at issue—namely serum treatment If we have been unable to equalise the groups ab initio we must equalise them to the utmost extent by the mode of analysis As far as possible it is clear however that we should endeavour to eliminate or allow for these extraneous or disturbing causes when the experiment is planned in a carefully planned experiment we may determine not only whether serum is of value but whether it is more efficacious at one age than another &c It is a serious mistake to rely upon the statistical method to eliminate disturbing factors at the completion of the work No statistical method can compensate for a badly planned experiment

Planning and Interpretation of Experiments

It follows that the statistician must be able to advise upon the statistical lines [illegible] such as that referred to above should follow Elaborate experiments can be planned in which quite a number of factors can be taken into account statistically at the same time (R A Fisher The Design of Experiments 1935) I[illegible] possible to d[illegible] such methods here and [illegible] is confined t[illegible] type of simple [illegible] out with [illegible] medical workers [illegible] Limitat[illegible] discussion to that [illegible] be tak[illegible] that it is the best form of experiment in a particular case.

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[1] Medical Statistics (1921) *Lancet* 1 985

The essence of the problem in a simple experiment is, as emphasised above, to ensure beforehand that, as far as is possible, the control and treated groups are the same in all *relevant* respects. The word relevant needs emphasis for two reasons. First, it is obvious that no statistician can be aware of all the factors that are, or may be, relevant in particular medical problems. From general experience he may be able to suggest certain broad disturbing causes which should be considered in planning the experiment (such as age and sex in the example above) but with factors which are narrowly specific to a particular problem he cannot be expected to be familiar. The onus of knowing what is likely to be relevant in a specific problem must rest upon the experimenter who is, presumably, familiar with that narrow field. Thus, when the statistician's help is required it is his task to suggest means of allowing for the disturbing causes, either in planning the experiment or in analysing the results, and not, as a rule, to determine what *are* the relevant disturbing causes.

The second point that must be observed as regards the equality of groups in all relevant respects is the caution that must attend the interpretation of statistical results. If we find that Group A differs from Group B in some characteristic, say, its mortality rate can we be certain that that difference is due to the fact that Group A was inoculated (for example) and Group B was uninoculated? Are we certain that Group A does not differ from Group B in some other character relevant to the issues as well as in the presence or absence of inoculation? For instance, in a particular case, inoculated persons might, on the average, belong to a higher social class than the uninoculated and therefore live in surroundings in which the risk of infection was less. We can never be *certain* that we have not overlooked some relevant factor or that some factor is not present which could not be foreseen or identified. It is because he knows a complex chain of causation is so often involved that the statistician is, as it appears to many persons, an unduly cautious and sceptical individual.

The reason why in experiments in the treatment of disease the allocation of alternate cases to the treated and untreated groups is often satisfactory, is because no conscious or unconscious bias can enter in, as it may in any selection of cases, and because *in the long run* we can fairly rely upon this random allotment of the patients to equalise in the two groups the distribution of other characteristics that may be important. Between the individuals within each group there will often be wide differences in characteristics, for instance in body weight and state of health, but with *large* numbers we can be reasonably sure that the numbers of each type will be equally, or nearly equally represented in both groups. If it be known that certain characteristics will have an influence upon the results of treatment and on account of relatively small numbers the distribution of these characteristics may not be equalised in the final groups, it is advisable to extend this method of allocation. For instance alternate persons will not be treated but a division will be made by sex, so that the first male is treated and the second male untreated, the first female is treated and the second female untreated. Similarly age may be equalised by treating alternate males and alternate females at each age or in each broad age group if individuals whose ages are within a few years of one another may in the particular case be regarded as equivalent.

AN EXAMPLE

Even if in planning the experiment factors such as age and sex have thus been equalised in the two groups, the analysis of the results should never be directed only to the effects of treatment upon the totals. It is possible that treatment may be more effective at one age than at another and this difference will be lost sight of if the groups as a whole are alone compared. As far as the number of observations allow, comparison should be made between sub groups differentiated by any factors that may be of importance. As an example of this experimental method and analysis may be cited the report of the Therapeutic Trials Committee of the Medical Research Council on the serum treatment of lobar pneumonia (*Brit med J* 1934, 1, 241). In each of three centres, London, Edinburgh, and Aberdeen, it was arranged that alternate cases taken in order of their admission to hospital should be treated with serum, both treated and untreated being so far as possible in the same wards and under the care of the same physicians. "It was thought better not to attempt a deliberate sorting of cases in respect of mildness or severity, but to trust that the distortion of chance scatter would become almost negligible in a fairly large number of cases." Age, it will be observed, was not equalised in the allotment of cases, and as fatality from lobar pneumonia certainly varies with age the analysis must first show whether the serum and control groups are equivalent in that respect. The random allocation of patients has, in fact, not quite equalised the groups in that factor. Taking the figures for London and Aberdeen (in Edinburgh the method was not fully carried out) and combining Types I and II, the numbers in two broad age-groups were —

Age	Number of patients		Percentage in each age group	
	Controls	Serum treated	Controls	Serum treated
20–40	104	123	65	75
40–60	55	40	35	25
Total	159	163	100	100

Roughly 35 per cent of the control cases were of ages 40–60 and only 25 per cent of the serum treated. It follows that the comparison of results must essentially be made within, at least, these two age groups. If a lower fatality rate is found in the serum treated when the total groups are compared, this result may merely be a reflection of the fact that 10 per cent less of these patients belonged to the ages at which fatality is normally higher and, correspondingly, 10 per cent more belonged to the ages at which fatality is normally lower. In other words, as the method of allotment has not equalised the groups in an important respect with regard to fatality, the method of analysis must do so.

It is impossible to ignore the fact that in the random allocation of patients to the treated and untreated categories a difficult moral issue is often raised. The treatment is usually based on a priori evidence which suggests that it should have some curative effect. Can it then be justifiably withheld from any patient? And if it is withheld how extensive a trial is justifiable? There are no easy answers to these questions There can be no doubt that any new therapeutic measure *should* be given a period of trial before coming into general use If the results of such a measure are dramatic in the light of all past experience then clearly the trial period will not need to be prolonged But one must be careful of the interpretation of dramatic ; it must imply *something strikingly different from all previous* experience not merely a run of a few successes where some failures might well have been expected Such dramatic events are unfortunately the exception More usually the effect of the new measure will be relatively small though none the less important and therefore its presence (or absence) be difficult to detect in small-scale tests Such tests may well give contradictory and confusing answers They may enable a useless measure to hold for years a position it does not merit (sometimes perhaps to the exclusion of more worthy measures) they may even prevent a really valuable form of treatment obtaining the general recognition it deserves A well planned and extensive trial (such as has been *carried out with measles serum) would obviate* such undesirable results and thereby possibly save more suffering in the long run than is incurred in the trial itself and more speedily than the indeterminate results given by inadequate tests would allow

Summary

The statistical method is required in the interpretation of figures which are at the mercy of numerous influences and its object is to determine whether individual influences can be isolated and their effects measured The essence of the method lies in the determination that we are really comparing like with like and that we have not overlooked a relevant factor which is present in Group A and absent from Group B In experiments involving the treatment of a number of patients who are to be compared with controls not given the specific treatment, any deliberate choice of individuals to be treated may lead unconsciously to the treated group differing *from the untreated group in some characteristic* which known or unknown has an influence upon the results If the series of cases is large a random allocation of individuals—e g by cases being alternately placed in the treated and untreated *groups*—may reasonably be relied upon to equalise the two groups in all characteristics except the one under examination Such a method of allocation does not obviate the necessity of testing in the statistical analysis of the results whether in fact the groups are equal in all characteristics which are believed to be relevant.

A BRADFORD HILL.

SPECIAL ARTICLES

INCIDENCE OF ANÆMIA IN PREGNANCY

INFLUENCE OF SOCIAL CIRCUMSTANCES AND OTHER FACTORS

By W J S REID B Sc M.D Aberd M R C P Lond
HON PHYSICIAN TO ANCOATS HOSPITAL, MANCHESTER AND
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A SERIES of 1108 pregnant women was examined There was no selection of cases either as to social circumstances or as to parity the patients being those who attended the Stockport corporation antenatal clinics The Haldane hæmoglobinometer was used, and the hæmoglobin estimations were all made by one of us (J M M) The examinations extended over about two years, and were more or less evenly distributed throughout the seasons About half the women were examined in the forenoon and the rest in the afternoon Some 72 per cent of the examinations were made between the twenty-sixth and the thirty-second week of pregnancy and only 7 per cent after the thirty sixth week The age and parity distribution of the women is shown in Table I

Incidence of Hyperchromic Anæmia—In all cases showing a *reading of 70 per cent of hæmoglobin* and under blood films were prepared and examined by one of us (W J S R) No case of pernicious anæmia was found It may be recalled that Evans who examined 4083 patients found no case of severe anæmia

Incidence of Hypochromic Anæmia—Amongst our cases we found that 4 0 per cent gave a hæmoglobin reading of 86 per cent and over 43 9 per cent showed a reading between 70 and 84 per cent and 10 2 per cent gave a reading below 70 per cent Davidson and his colleagues in Aberdeen (1935) in an examination of 810 pregnant women found 17 5 per cent with a hæmoglobin reading below 70 per cent. *Helen Mackay (1935) in London* examined 100 pregnant women and found 4 6 per cent. with a hæmoglobin reading below 70 Boycott (1936) also working in London in a series of 222 cases found 11 per cent of his cases gave a reading below 70 All these workers used the Haldane method American investigators Moore (1929) Lyon (1929) Galloway (1929) Adair Bland Goldstein First (1930) with various methods of estimation examined groups of cases ranging from 100 to 1176 in number and found a much greater incidence *of anæmia in pregnancy They give figures* ranging from 19 to 81 per cent of patients with less than 70 per cent hæmoglobin

TABLE I

Age-group	Parity													Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	
20 and under	75	14	2	—	—	—	—	—	—	—	—	—	—	91
21–25	205	9°	27	12	2	1	—	—	—	—	—	—	—	330
26–30	117	90	79	25	18	11	—	—	—	—	—	—	—	340
31–35	31	40	29	30	28	10	12		4	1	1	—	—	189
36–40	8	10	6	14	11	11	8	3	6	3	3	4	—	96
41 and over	4	1	5	2	0	4	3	2	1	3		—	1	31
Total	440	26	148	80	65	37	23	12	11	7	6	4	1	1108

Effect of Social Circumstances—In order to determine whether economic circumstances had any effect we divided our patients into two groups according to the average income per head of the family per week after deduction of rent Group I comprised those women whose family income amounted to an average of 12s per head per week or less Group II those with an average over 12s per head It was possible to assess the income in each case with a considerable degree of accuracy from office records and the personal knowledge that the health visitors have of each family. For this purpose the pregnant woman is counted as two, so that, for example, when dealing with a primipara, she would be in Group I if the family income after deduction of rent was 36*s* per week or less, and in Group II if over that amount. Table II shows the results of such a comparison.

TABLE II

—		Social group	Total in group	Number below Hb 70	Per cent below Hb 70
Whole series	{	I	710	93	13·2
		II	398	20	5·0
Primiparæ	{	I	211	16	7·6
		II	229	10	4·4
Multiparæ	{	I	499	77	15·4
		II	169	10	5·9

Whether the figures are taken as a whole or divided into the two groups of primiparæ and multiparæ, it is found that the percentage in Group I showing a hæmoglobin reading below 70 is considerably greater than in Group II. It appears, therefore, that the social circumstances have a definite influence on the hæmoglobin readings. This is in accordance with the findings of Bland, Goldstein, and First (1930). Boycott (1936), on the other hand, was unable to find any correlation between the hæmoglobin level and the social circumstances.

Influence of Multiparity.—Bland, Goldstein, and First do not consider that parity has any relation to a low percentage of hæmoglobin. Neither Helen Mackay (1935) nor Boycott (1936) was able to obtain conclusive results.

In our series the percentage of patients giving a hæmoglobin reading below 70 in Group II of both primiparæ and multiparæ is about 5, but in Group I there is a conspicuous difference between the primiparæ and multiparæ—i.e., 7·6 compared with 15·4. To investigate this point further, the multiparæ were divided into two groups, those with two to four pregnancies in one group, and those with five or more pregnancies in the other group. The results are shown in Table III.

TABLE III

—	Per cent. below Hb 70		
	Total	Social group	
		I	II
Primiparæ	5·9	7·6	4·4
2–4 para	12·1	15·1	4·6
5 para and over	15·7	15·5	16·7

When social Group II is studied, it is found that the percentage with a hæmoglobin reading below 70 is about the same for primapara and for those women with two to four pregnancies, but that among the women with five or more pregnancies the percentage with a hæmoglobin reading below 70 is three times as great. Multiparity, therefore, in good social circumstances, appears to begin to exercise a definite effect only when the women have had five or more pregnancies. In poorer social circumstances multiparity appears to have an effect on the hæmoglobin level at an earlier stage. This effect is no doubt accentuated by the fact well known to all social workers that when the economic circumstances are poor, the mother almost without exception sacrifices her own interests to those of the rest of the family. In better social circumstances no such sacrifice is called for.

Influence of Age.—Age is another factor which may be considered. Bland, Goldstein, and First (1930) concluded that age did not influence the incidence of moderate or severe anæmia. Mackay (1935) found no change with increasing age. Boycott (1936) also found no correlation between age and the hæmoglobin level.

To exclude the influence of parity, primiparæ only were considered in this connexion. Two groups were taken: those under 21 years of age, and those of 31 and over. The results are shown in Table IV.

TABLE IV

—		Age	Per cent below Hb 70		
			Total	Social group	
				I	II
Primiparæ only	{	Under 21	8·0	9·5	6·1
		31 and over	6·9	17·6	—

Age seems to have no influence, but the influence of social circumstances is once again manifest.

Effect of Work.—A considerable proportion of women in the north western area work at various trades during pregnancy. In the series 318 women worked outside their own homes during pregnancy, and 790 did their ordinary household work. Of the outside workers, 7·5 per cent had a hæmoglobin value below 70, and of those who worked at home 11·3 per cent had a value below 70. When they are separated into primiparæ and multiparæ, and again subdivided into the two social groups, the difference between the workers and non workers disappears, as Table V shows.

TABLE V

—		—	Per cent below Hb 70		
			Total	Social group	
				I	II
Primiparæ.	{	Workers	5·9	7·2	4·2
		Non workers	5·9	8·1	4·5
Multiparæ.	{	Workers	11·3	14·7	3·4
		Non workers	13·3	15·5	6·4

Again the influence of social circumstances is apparent, and especially among the multiparæ in social Group II, where the influence of the addition of the woman's wage to the family income is clearly shown in the low percentage of those giving a reading below 70.

Influence of Abnormality in Pregnancy.—It was not possible to trace any influence from this cause on the hæmoglobin level.

It is proposed in a further paper to study the influence of the anæmia on the subsequent history of mother and child. So far, from a preliminary examination, we have been unable to trace any influence on the maternal death rate, the stillbirth rate, or the neonatal death rate.

SUMMARY

(1) The hæmoglobin level was estimated in 1108 pregnant women, and 10·2 per cent of them gave a

reading below 70 per cent (2) The anæmia was always hypochromic (3) When the women were divided into two groups according to the family income it was found that the incidence of anæmia was higher in the lower income group (4) Multiparity in good social circumstances did not appear to have much influence except in women with five or more pregnancies (5) Age work outside the home or abnormality in pregnancy had no recognisable influence on the degree of anæmia.

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A SOVIET HEALTH RESORT

(FROM A CORRESPONDENT LATELY TREATED THERE)

KISLOVODSK, situated in the mountainous region of the Northern Caucasus has in the past few years become one of the most frequented and highly developed spas of the Soviet Union Large further development is planned for the next ten years including a hotel and sanatorium for foreign visitors The object of this ten years plan of construction is full utilisation of the natural resources of the locality the climate and mineral gaseous springs

The centre of the town is 800 m above sea level, but some of the new sanatoriums are at a height of 1000 m. It lies in a narrow valley protected from the wind on all sides but the north. Its climate is sub alpine and the season is from June to March March, April, and May being rainy months The summer is hot but not oppressive for the nights are always cool. The autumn and winter are dry and sunny and there are more hours of sunshine than at Davos Some sanatoriums close for repairs and spring-cleaning during the rainy months but the spa functions all the year round.

The mineral gaseous water of Kislovodsk *Narzan* was appreciated by the ancient inhabitants of the region, the Abhasians, and was called by them *Nard-san*—i e athlete water Its composition is compared to that of Bad Nauheim narzan having 1 06 g free carbonic acid gas per litre; Nauheim water 3 9; narzan 4 4 g mineralisation and Nauheim 20 10 The main narzan spring gives 2,000 000 litres of water a day An equally gaseous but more highly mineral spring gives 700 litres. Narzan No 1 is bottled as a table water but its great therapeutic use is in baths Narzan No 2 is not used for baths but is considered valuable for certain digestive disorders.

The principal spring has long been protected from pollution and made available for both drinking and baths The first bath house was built in 1803 and one equipped with English porcelain baths still in use was erected between 1910 and 1914; but there were no sanatoriums and no permanent medical service before the end of the Civil War

The planned development of the Caucasian spas along with the other health resorts of the Soviet Union began in 1924 when the All Union Central Organisation of Health Resorts was established in Moscow It appoints a director in each spa who with his staff, controls the medical treatment on the spa territory The four Caucasian spas with their rich and varied mineral and radio-active springs and mud baths are in close touch for medical, research and administrative purposes The local sanatoriums are controlled by various bodies but they conform to the principles of medical treatment laid down by the spa management These principles are based on the research work carried out in the appropriate health resort scientific institute—for instance at the State Central Institute for the Study of Health Resorts at the State Institute of Medical Climatology and Climate Therapy in Moscow or at the State Balneological Institute at Piatigorsk which is the scientific headquarters of the Caucasian spas Each institute publishes the results of its researches in three or four yearly volumes there is a monthly journal of the health resort medical service and conferences of the health resort specialists are periodically called Some sanatoriums also carry on independent research Detailed records of all patients are kept at all sanatoriums and their previous and subsequent health history is available The central organisation coördinates all this work and directs the lines of research.

THE SANATORIUMS AND THEIR PATIENTS

The patients do not themselves pay for the treatment they receive but they may pay for part or all of their board and lodging The trade union or organisation for which a patient has been working pays for his medical treatment and for the balance of his board. The capital expenditure of the spa is covered by State or trade union grants This means that enormous sums are being spent by the State on the development and upkeep of the spas and that this expenditure must be justified by a careful selection of those patients who will benefit most in the shortest time by the treatment that a given spa provides

In each industrial or rural health service organisation a commission of two or three health resort specialists makes the final selection from patients referred to them after considering the value and capacity of every health resort in the Soviet Union Kislovodsk for instance would benefit a very large range of patients by reason of its excellent climate but its water makes it specially suitable for the treatment of diseases of the heart and vascular system, with or without certain nervous disturbances and minor affections of the lungs Acute heart cases those with renal disease and some types of nervous disorder are not sent to Kislovodsk either because they would not profit by it or because they would interfere with the other patients

Though patients can and do get lodgings in private homes or in hostels and receive out patient treatment in the spa clinics this is regarded as a stop-gap arrangement The development of Kislovodsk as a health centre is based on the sanatorium designed to give the patient the utmost comfort and rest and equipped with most or all of the apparatus necessary for treatment

Within the last twelve years some 55 sanatoriums have been established 13 belonging to the Central Health Resort Organisation 14 to different trade unions and the remainder to the various ministries the health ministries of the national minorities particular factories or industries the coöperatives and other organisations Some of the sanatoriums are old villas adapted and enlarged but most are spacious new buildings housing 100–250 patients in rooms with one to four beds, and hot and cold running water, and balconies with couches or easy chairs The allocation of rooms varies according to the management of the sanatorium For instance, in that of the Ministry of Agriculture half the rooms are single, and they are allocated on medical grounds to the patients who would be likely to disturb roommates, in the sanatorium for savants, one of the most luxurious, double rooms are provided only for married couples, and there are a number of suites of two rooms for academicians and in the newest trade union sanatorium for industrial workers the majority of rooms are for three or four, and the few single rooms are generally allotted to children who, for family reasons, are obliged to accompany a parent who is a patient The State Bank workers' sanatorium has nothing but double rooms There is a generous allowance of bath and shower rooms per corridor

Almost every sanatorium has its hydrotherapy department where pine extract and other medicated baths and various douches are given This form of treatment for nervous patients is very widely practised in the Soviet Union In some of the central sanatoriums the narzan water is laid on and the baths can be taken on the premises, but as a rule the patients are transported by motor omnibus from their sanatorium to the central pre war bath house and the new October Baths Both establishments are open twelve hours a day Patients receive a week's supply of tickets giving time of appointment and number of bath cubicle from their nurse at the sanatorium The cubicles are well ventilated, there is a rest room with as many divans as cubicles, and a physician is always in attendance Each sanatorium has its electro cabinet equipped for light treatment galvanisation d'Arsonvalisation, faradisation ionisation and diathermy Most have dentists' consulting rooms, X ray cabinets, and laboratories for clinical tests Neighbouring sanatoriums sometimes share each others' laboratories and X ray apparatus, or the central spa establishments may be used

The sanatorium staff consists of about one doctor for fifty patients besides the sanatorium director, who is generally also chief physician though his duties are mainly administrative, and there are also a number of visiting specialists There are trained nurses always on duty, several masseuses, and at least one gymnastic instructor who has specialised in remedial gymnastics In the new trade union sanatorium for 250 patients there are three gymnastic instructors, and at the time of my visit there were fifteen different groups of patients for remedial exercises An open air sports' ground and indoor gymnasium as well as a gymnastic apparatus room are provided

The sanatorium dining room is generally a light and spacious room furnished with tables for four Three substantial meals and a light tea or supper are provided on restaurant lines—i e , there is a fair choice of dishes and several courses at each meal Each sanatorium has its dietitian and in most cases the head cook has been trained or has had part of his training at Prof Pevsner's dietetic hospital in Moscow Regulations insist that the head cook as indeed all specialists shall be sent to their training institute for refresher courses every year The organisation of diets varies from sanatorium to sanatorium The fullest development is seen in the savants' sanatorium where fourteen basic diets are recognised the tables are numbered accordingly and each dish on the menu has against it the diet number for which it is allowed Happy the patient on diet number fourteen, for he may partake of every dish! The prominence given to dietetics is partly due to the prevalence of intestinal disorders in a country where typhoid and dysentery are still fairly common, and partly to the fact that market gardening and poultry, dairy, and fruit farming are still little developed in the outlying parts of the Soviet Union The spa has had to organise its own "food base" Many sanatoriums have their home farm, but at a considerable distance over unmade roads Cooks must be skilful to produce balanced, tasty, and digestible meals out of somewhat coarse and limited products Moreover patients come from all over the Union, many from places more distant and different in climate and food conditions than even England, from Yakutia, Turkmenistan, Karelia, and Mongolia, for instance, and they need education in choice of food In addition to these considerations much research is being done on the dietetic treatment of rheumatism and gout, and many Kislovodsk patients are being treated for obesity In cases which permit of it the " terrain cure " is used for overweight The great public park is traversed by carefully graded and measured walks, plentifully provided with seats, and leading up the hillsides The doctor's prescriptions may include two daily walks to the Red Sun hill top or one up the Little Saddle

AMUSEMENT AND TREATMENT

Entertainment, considered as culture and education, is organised by a member of the staff, generally one of the gymnastic instructors The big sanatoriums have their concert and dance halls or theatres and cinemas fitted with sound apparatus Films, concert and variety artists from Moscow, Leningrad, and Rostov tour the health resorts Patients from neighbouring sanatoriums are invited in to each others' entertainments, tickets for the central spa theatre and concerts are distributed by the " culture worker " Games, dances and excursions are organised Sanatoriums have their libraries, and chess and billiards are played

Sanatorium régimes vary but are not oppressive Indeed it is the established policy to make the newly arrived patient aware of the possibilities rather than of the restrictions In some sanatoriums children are admitted, in others—generally those belonging to organisations that have their children's sanatoriums—they are forbidden Husbands or wives of patients can usually get a place if they apply in time, even though this practice is counter to the principle, mentioned above, of very careful selection of patients on medical grounds There is a social factor in the selection too The more valuable workers get preference over the less energetic, devoted, and responsible It would be a false economy to separate husbands and wives who want to spend their leave together, and these valuable workers are worth generous treatment A children's playground has been established in the centre of the park by the spa management It is staffed by trained teachers and has provision for a hot midday meal and afternoon rest Children can thus be taken off their parents' hands for a large part of the day Medical examinations and treatments are by appointment, so that patients are spared waiting about Generally they have baths and some other form of treatment on alternate days Meals are served over two hour periods In the afternoons there is a two hour rest period when patients should be either in their rooms or off the premises In some sanatoriums there is lights-out at 11 30 in others there is no fixed bed time On the whole the sanatoriums are quiet. The resident staff generally occupy separate buildings with their families and the domestic staff live in the town The wide carpeted corridors and stairs and general large allowance of space per head seem conducive of tranquillity Both spa and sanatorium directors and patients seemed puzzled when questioned about discipline always replying But they are not children here; they know how to behave ' There is a rule that a patient can be expelled for drunkenness but it would only be enforced for persistent drunkenness and no one could quote a case of this Alcoholic drinks are not served in the sanatoriums but can easily be obtained in the public restaurants and bars The Caucasian wines are much appreciated and patients seemed to be drinking them in moderation but very little drinking of spirits was to be observed Smoking is allowed everywhere but in the dining rooms though of course both alcohol and tobacco may be forbidden to individual patients There was very little evidence in either conversation or behaviour of patients disobeying doctors orders No one said Just this once though of course I m not supposed to On the contrary patients seemed very ready to coöperate with authority and extremely critical of any laxity

The health resorts of the Soviet Union have been termed in official pronouncements the repair shops of the workers This may suggest a somewhat inhuman and mechanical treatment of patients but actually the solicitude for them and the amount of individual attention that each one gets is remarkable The idea is to overhaul the patient as thoroughly as possible in the three to nine weeks of his stay The director of the Ministry of Agriculture s sanatorium pointed out the importance of the dentist s accessibility for his patients Agricultural workers generally live far from a dentist and neglect their teeth We must see to their teeth while they are here and educate them in oral hygiene too Nearly every women patient is referred to the gynæcologist Troubles hitherto unsuspected may be discovered by the day to-day observation of patients at rest and serious developments prevented Patients are encouraged to complain of their minor ailments to the nurse or physician responsible for them and treatment is modified as the patient requires Most patients see their nurse every day She must examine the spa booklet in which all treatment prescribed is entered and make the necessary arrangements for its performance The resident doctors see their patients at least once in six days and on the patient s departure they check his booklet and enter in it necessary recommendations for the future Patients seemed to be enjoying the care and consideration which they received They talked very little of their ailments to each other and a great deal of their pleasure in their beautiful surroundings By the end of their stay they are generally getting a little bored with comparative inactivity and are glad to leave since they now feel better

Kislovodsk is still in its infancy Under the ten year scheme of development the territory of both town and spa will be considerably enlarged A town park and cultural centre will be established apart from the spa park theatres cinemas and concert hall and open air places of sport and entertainment The existing sanatoriums are regarded as too close together this gives a towny effect whereas people should rest and recuperate in the country The defect will be remedied by the removal of the old buildings and the utilisation of the space for gardens. In the future sanatoriums with a space allowance of 250 sq m per head (including garden space) is envisaged Two more narzan springs have been discovered and will be brought into use so that there will be enough water for 17 000 patients at a time to have narzan bath treatment. The number of patients passing through the spa every year will be increased to 200 000 Beautiful perspectives magnificent public buildings and places of refreshment green zones swimming pools and lakes fountains statuary and all the appurtenances of pleasure grounds have been planned in detail as well as the more prosaic matters of sanitation transport cold storage and central heating This comprehensive planning of amenities together with the systematic study of the application of the natural resources and the effects of treatment make Kislovodsk a health resort of exceptional interest and promise

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PARIS

(FROM OUR OWN CORRESPONDENT)

COMING REFORMS IN VENÉREAL DISEASE LEGISLATION

M Henri Sellier Minister of Public Health has just issued his draft of a Bill soon to be submitted to Parliament on the prophylaxis of the venereal diseases This Bill has been awaited with much suspense in many quarters the medical profession has dreaded further incursions into professional secrecy and the proprietors of licensed brothels have taken genteel offence at the prospect of their activities being identified with the white slave traffic It is evident however from a first scrutiny of this draft that M. Sellier has enjoyed the aid of diplomatists with a knowledge of human nature and of legal experts intimate with social and medical problems If only half the good intentions expressed in this Bill materialise a great step forward will have been taken towards the control of the venereal diseases There are thirty articles in the Bill but no attempt will be made here to summarise all of them According to the first article, it will be incumbent on a doctor in attendance on a patient of either sex suffering from a venereal disease which is contagious or liable to become so to supplement his prescription with a notice drawing attention to the contagious nature of the disease in question and to the provisions of the new law The second article is concerned with the conditions under which a doctor must notify to the public health authorities the case of a patient who is behaving so as to be a danger to others or himself Later the conditions are defined under which communication of a venereal disease from one person to another is punishable by imprisonment or a fine in an extreme case a term of five years of imprisonment may be inflicted In another article the public health authorities are empowered to demand a medical certificate of any one about whom they have good reasons for suspecting that he or she is suffering from and transmitting to others some venereal disease There follows a whole string of provision calculated to prevent the transmission of syphilis in the act of wet nursing taking into account both alternatives—the infection of a healthy wet nurse by a syphilitic infant and of a healthy infant by a syphilitic wet-nurse

M Sellier s Bill also provides for the continuity of specific treatment the neglect of which by the patient becomes a legal offence He or she may choose between the treatment available at a dispensary or that of a doctor approved by the health authorities, but in either case the treatment chosen by the patient must be submitted to by him Otherwise he or she risks forcible detention in a hospital, discharge from which may require the consent of the authorities Infraction of this rule may qualify for a term in prison not exceeding three months Up to three years of imprisonment may be earned by persons habitually debauching and corrupting persons of either sex under the age of 21, and even if the sufferer is over this age, certain penalties may be inflicted. No one may proceed to the fifth examination for the doctorate of medicine without presenting a certificate indicating that the holder has attended a course of instruction in the venereal diseases approved by the faculty of medicine, a certificate must also be produced stating that an examination referable to these special studies has been successfully passed. Other articles are concerned with remedies and tests No remedy may be sold or employed in a public institution for the treatment of a venereal disease unless it is identical with what has been endorsed by the Ministry of Public Health on the recommendation of the Academy of Medicine Only those laboratories approved of by the public health authorities will be considered as authorised to undertake the necessary serological tests for the diagnosis of syphilis It is stated that when the new law comes into force, all the old administrative machinery concerning the sanitary regulation of prostitution will cease to exist

A NEW MEDICAL SCHOOL BUILDING

The foundation stone of the new buildings of the Paris faculty of medicine was laid on Dec 3rd in the presence of a distinguished gathering representative of the municipal authorities, the University of Paris and the medical profession M Jean Zay, Minister of National Education, presided, and among those present were Prof Roussy, doyen of the faculty of medicine The doyens of the four other faculties, as well as M Charléty, rector of the University, were also present The new buildings, which are to serve the education of medical students in the first two years of their training, are to be built on the site of the Charité Hospital in the very heart of Paris

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

ASCORBIC ACID IN URINE

AT a meeting of the Edinburgh Pathological Club a fortnight ago Drs H Scarborough and C P Stewart described their observations on the estimation of ascorbic acid in urine They said that the amount of indophenol reducing substances in normal urine is increased by boiling with acid in an inert atmosphere and by prolonged treatment with H_2S Study of the rate of oxidation of these substances by atmospheric oxygen and of their regeneration by H_2S suggests that part at least is not ascorbic acid, though it behaves in a somewhat similar way This suggestion is supported by the fact that only part of the indophenol reducing power disappears rapidly when the urine is aerated in the presence of the specific hexoxidase recently studied by Hopkins and Morgan The fact that part of the indophenol reducing power does disappear rapidly under these conditions suggests that ascorbic acid is actually present This conclusion, however, depends upon the absolute specificity of the enzyme, which is not yet fully established The actual quantity of presumed ascorbic acid is greater than that determined by any of the direct titration methods Part of it seems to be present in a combined form (hydrolysed by acid) and part in the dehydro form (reduced by H_2S) The non ascorbic acid substance is not cysteine, glutathione, ergothionine, glycuronic acid, galacturonic acid, nor glucose

MEDICINE AND THE LAW

Proof of Insanity in Criminal Cases

IN R *v* North the Court of Criminal Appeal was asked on Dec 14th to say that a jury might infer insanity even though the defence had offered no specific evidence of it by means of medical or other witnesses North had been keeping company with the deceased girl with her mother's consent Last July the pair went out into the country together Later, the same evening, North stopped a policeman who was bicycling along the road and showed him the fly leaf of his bank book on which was written a short account of the crime He then took the policeman into a field and pointed out the girl's body lying in some long grass Death was due to strangulation and there was evidence of a bruise on the chin Defending counsel, though conceding that there was no medical evidence of insanity, invited the jury to look at the whole story and infer that North was mad at the time Mr Justice Goddard told the jury that there was no evidence on which a verdict of insanity could properly be founded and in effect directed them to disregard that defence On appeal it was argued that neither in North's case nor in any case was a judge entitled to give the jury such a direction The Court of Criminal Appeal however, said that this step was properly within the province of the judge at trial

Expert evidence of insanity is not indispensable, this point was established in R *v* Dart in 1878 But, if the defence of insanity is to succeed, proof must be given, the onus of proving it is on the accused The issue is a question of fact which the jury must determine under the direction of the judge Lord Hewart seized the opportunity in North's case to declare once more the three conditions which accused persons must satisfy if insanity is to be a good defence—the three "stiles" to be surmounted, as he called them in R *v* Anderson (the East Brighton golf links murder) First it must be proved that, at the material time, the accused was suffering from disease of the mind—Stile Number One Secondly it must be proved that, by reason of that disease of the mind, he was labouring under a defect of reason—Stile Number Two Lastly comes a choice of stiles, the accused need not get over both of them, but he must get over one or the other He must prove that, by reason of deficiency due to disease, he either did not know what he was doing, or, if he did know, he did not know that he was doing wrong In North's case, said Lord Hewart the task of the defence had never been so much as begun It may be added that it is not the duty of the prosecution to tender evidence of a prisoner's insanity This point was dealt with by the Court of Criminal Appeal in R v Oliver Smith in 1910 It had arisen earlier over the practice of the Crown calling the prison doctor to prove the prisoner's state of mind At a meeting of the judges it was decided that the Crown should not call evidence of insanity but that any evidence in the possession of the Crown should be placed at the disposal of defending counsel to be used by him if he thought fit

Another Unsuccessful Appeal

On the same day the Court of Criminal Appeal rejected a similar appeal against a conviction for murder where death had been caused by strangling (R v Batty) and where insanity had been mentioned as a possible defence Batty had gone on a half day excursion with the dead girl and in some sort of quarrel he had taken her by the throat Next morning he gave himself up to the police and took them to the field where the body lay There was medical evidence that death occurred quickly and it was contended that there was no evidence that more than one hand had been used The appellant's counsel argued that the trial judge had omitted to refer to these facts which might have justified a verdict of manslaughter instead of murder Lord Hewart said it amounted to a suggestion that the judge had not adequately invited the jury's attention to fragments of the evidence indicating that the accused might not have known the exact length of time for which a person must be throttled in order to cause strangulation There was he said nothing in this argument and the appeal must be dismissed

Battersea Hospital Litigation

The headline Hospital Staff Sensation in a London daily newspaper this week was followed by statements that ten Harley-street and Wimpole street specialists were applying for an interim injunction to restrain the Battersea General Hospital from dismissing them from its honorary staff Recent changes in the name and objects of the Battersea General Hospital, eliminating the element of anti vivisection were discussed in THE LANCET a year ago (Nov 30th 1935 p 1245) It was subsequently decided that all the appointments at the hospital should be thrown open to public competition An independent body was asked to select a new staff from those who applied and some of those members of the old staff who were not reappointed are contesting the legality of what has been done No comment can be made on the situation without trespassing on matters which are now sub judice but any proceedings which elucidate the legal position of the honorary members of hospital staffs will naturally be of interest to the medical profession

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PSYCHIATRIC DEMONSTRATIONS —The senior medical staff of the Maudsley Hospital are coöperating with Dr Desmond Curran in giving psychiatric demonstrations at St George's Hospital to alternate with the neurological demonstrations held by Dr Anthony Feiling at 5 P.M. on Thursdays. The following have been arranged for next term: Dr Curran (Jan 14th) Dr Aubrey Lewis (Jan 28th) Dr W H Hubert (Feb 11th) Dr E Guttmann (Feb 25th) Prof E Mapother (March 11th) and Dr Lewis (March 25th) Dr Hubert will deal with the problems of child psychiatry and the other lecturers with psychiatric problems of adult life These demonstrations are not confined to students of the hospital, and further information may be had from the dean.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Lt A E. Flannery to be Surg Lt -Comdr

Surg Lts (D) W L. Mountain to *Royal Sovereign* and H C Brewerton R. D Johnston and G P Pearse to *Pembroke* for R.N B

A Greenwich Hospital pension of £50 a year has been awarded to Fleet Surg C S Facey M.B retd in the vacancy created by the death of Surg Capt P E Maitland retd. on Dec. 1st.

Applications are invited for appointment to commissions as Dental Officers in the Royal Navy Candidates who must be below 28 years of age on the day of entry must be British subjects of pure European descent

Selected candidates will be entered for short service (six years) in the first instance and on its termination they will receive a gratuity of £1000 unless granted a permanent commission

Application forms and a pamphlet showing regulations for entry and conditions of service rates of pay, &c may be obtained from the Medical Director General of the Navy Admiralty S W 1

ROYAL NAVAL VOLUNTEER RESERVE

Surg Lt -Comdr C H A. Fido to *Drake* for R N B

Surg *Lts C A Mather and W D Williams promoted* to Surg Lt Comdrs.

Proby Surg Sub Lt. L Foster to be Surg Sub-Lt

ROYAL ARMY MEDICAL CORPS

The following appointment has been approved for the year 1937

To be representative Colonel Commandant of the R.A.M C :—

Major-General W H S. Nickerson V C C.B C.M.G., M.B Colonel Commandant R.A M C.

Maj A. L. Robertson O.B E to be Lt -Col

Short Serv Commissions Lt K. H. Foster resigns his commn.

Major E F W Mackenzie O.B.E M.C R A.M.C. has been awarded the Parkes Memorial Prize 1936 for his investigations into the ammonia-chlorine process of water purification in the field, coupled with research carried out by him in connexion with food-supplies in India

ROYAL AIR FORCE

Flight Lt. J H Cullinan is placed on the retired list at his own request

Flight Lt. A. E. Vawser is removed from the Royal Air Force

Flying Offrs D W I Thomas, R F Courtin and D J Dawson to Princess Mary's R.A.F Hospital Halton; P A Lee to Home Aircraft Depôt Henlow; A R Sibbald to No 5 Flying Training School, Sealand; R. H Pratt and E. W R. Fairley to R.A F Hospital Cranwell; J Conroy to No 7 Flying Training School, Peterborough; N P R. Clyde to No. 1 Flying Training School, Leuchars; and C E G Wickham to R.A F Station, Manston.

DEATHS IN THE SERVICES

Lieut.-Col. JAMES TIDBURY R.A.M C. (retd) who died on Dec. 22nd at Woking in his 85th year was educated at University College London and Queen's College Cork, and qualified M.D R U I in 1877 In the following year he joined the R.A.M C served with the Egyptian Expedition of 1882 being present at the battle of Tel-el Kebir and receiving the medal with clasp and the bronze star Retiring in 1898 he was re-employed from June 1915 during the European War and was awarded the O B E.

WE regret to learn of the death of Dr Percy Vernon Davies medical superintendent of the Kingston and District Hospital which occurred on Christmas Day as the result of blood poisoning Dr Davies had been attached to the hospital for 25 years being superintendent during most of the period. Owing to the situation of the institution many victims of motor accidents on the Kingston by pass road came under his care

CORRESPONDENCE

IN MEMORY OF JOHN BLAND-SUTTON

To the Editor of THE LANCET

SIR,—I desire to add my tribute to the memory of the great surgeon and remarkable man who has just passed away My memories of Sir John Bland Sutton extend back to 1891 when I entered the Middlesex Hospital medical school Mr Sutton, as he was then called, was the junior assistant surgeon and senior demonstrator of anatomy He was a small, pale man with a dark moustache Amongst us younger students he was chiefly known as a brilliant teacher of anatomy, but there was talk too of remarkable operative dexterity and courage Our medical education had not then proceeded far enough to appreciate or even to know about the wealth of anatomical and pathological work which he had already accomplished In those days a junior assistant surgeon had very little opportunity to distinguish himself in the operating theatre except during the holiday months, and it was not until he was appointed surgeon to Chelsea Hospital for Women in 1895 that Sutton got his chance

It was on his advice that in 1898 I went to Chelsea as resident officer and by that time he was the ' star turn " there The surgical treatment of uterine fibroids was then in process of development against considerable opposition from certain quarters Assisted by the late Arthur Giles, Sutton operated every Monday afternoon and the theatre was crowded with surgeons from all parts of the world He had a remarkable power of infusing enthusiasm into those who served under him and all of us worked with a will to make the operations go off as perfectly as possible It was the beginning of that "team work" which is now an established practice in all first class surgical centres In the face of his brilliant dexterity and successful results the opposition to the surgical treatment of fibroids rapidly died down and to him more than to any other surgeon in this country is due the credit of changing professional opinion in the matter of these tumours But he did more than this for he raised the status of abdomino pelvic surgery out of the narrow rut of specialism in which it threatened to stick and created the gynæcological surgeon in place of the gynæcologist

In appraising his place as a great operator it is necessary to have regard to the state of surgery at the time when he entered the calling The new territory which Lister s discovery had opened to surgeons was being cautiously explored, antisepsis was still in the carbolic spray stage, steam sterilisation was unknown catgut was unsafe, silk, silkworm gut and silver wire were the popular ligature materials, the most advanced surgical attire was a carbolised mackintosh apron over ordinary clothes and the idea of rubber gloves was nearly 20 years distant Operating theatres were poorly equipped and a large proportion of surgical operations was carried out in the houses of the patients under very disadvantageous conditions There was no system and very little coördination As a result, surgery with very few exceptions was laborious slow and timid Bland Sutton perceived that for operative work to be reasonably safe under such conditions simplicity and speed were essential and his results justified his opinion He reduced the number of instruments he used to the very minimum six pairs of Spencer Wells forceps, a dissecting forceps a pair of scissors a scalpel, half a dozen needles and a couple of reels of silk thread sufficing him for any operation He used antiseptic solutions very sparingly, especially on his own hands, maintaining, much in advance of his time that they merely made the skin rough and more prone to harbour infection There can be no doubt that at the outset of his career his views and practice as regards operating were largely influenced by Lawson Tait, of whom he always spoke with great respect He was exceedingly quick and dexterous, yet light handed as well, and his determinations were taken with unfailing rapidity and carried out with unfaltering resolution To the last day of his surgical life tedious prolonged operations had no interest for him, and indeed he never entered upon them

Only those old enough to know, or being too young can yet visualise the operating theatre of the eighties can appreciate how much our Art is indebted to him Since this present century began surgery has undergone a profound and advantageous elaboration, purchased however by the loss to the surgeon of some of that self reliance which was so striking in Bland Sutton at the operating table The conditions under which surgeons now work mask this loss, but there are occasions still when the fate of the patient depends on this great quality alone and for that emergency every surgeon should keep within himself something of the spirit of Bland Sutton

I am, Sir, yours faithfully,

VICTOR BONNEY

Harley street W Dec 21st 1936

To the Editor of THE LANCET

SIR,—Bland Sutton was one of the few truly great men of the present century, he had innumerable interests outside his profession—travel, archæology, the drama, biology, &c Everyone of course knows of his work on comparative anatomy, but he was also an excellent botanist, particularly interested in orchids and other plants whose life history is associated with insect life He was, moreover, kindness itself to all those with whom he came in contact, and was especially good to the younger men Soon after I was qualified he asked me to prepare sections of all the interesting tumours which he removed or which were sent to him, and for ten years we met about once a fortnight to examine these microscopically I used to look forward to these meetings because he would always think aloud while looking down the microscope, and recount in his own amusing way the chief points in the clinical history He had a great power of carrying on the ordinary concerns of life while he was pondering something deeper and more important It was because of this that his output of work was so enormous although it was his custom to leave nothing not even the most unimportant detail, to others Although I must have received hundreds (perhaps thousands) of letters from him, I never received one that was not written, and the envelope directed, by his own hand His letters were always exactly to the point not a word too little and not a word too much

But his true character may perhaps be best exemplified by an incident which occurred in my out patient department a few years ago A nun came to consult me and I asked her if she had been in in patient in the hospital before 'Yes, she said, I was under Saint John ' I replied, ' you must surely mean Sir John. Yes' she said I do and she hastened to add but I could not have been more kindly treated had it been the saint himself

I am Sir yours faithfully

Dec 22nd 1936 SOMERVILLE HASTINGS

To the Editor of THE LANCET

SIR,—I have reason to be grateful to Sir John Bland Sutton not only for his stimulating friendship over a long period of years but for his help in other ways It was in my undergraduate days that Frederick Page told me about Bland Sutton and recommended me to get his book on tumours I had then read his little book on ligaments which had opened up to us students a new world in anatomy The book on tumours was at once arresting and fascinating and I never read a story with greater avidity Bland Sutton kept up a correspondence with Page about the treatment of the placenta in advanced cases of ectopic gestation and I remember the glee with which we looked forward to hearing what he had to say in this mild controversy With the arrival of the *Clinical Journal* on Friday nights there was the eager anticipation of finding something from his facile pen I shall never forget the warm reception he gave me when I first came to look round London in 1900 He invited me to see his work at Chelsea and to accompany him there in a victoria with a pair of beautiful greys His conversation was like his writings except for the quips difficult to reproduce in writing which always conveyed some lesson His London accent of which I think he was a little proud seemed to heighten the point of his remarks He told me he had been born within the sound of Bow Bells adding Thank God within easy reach of the green fields and the country

Bland Sutton's reverence for John Hunter was remarkable. I was once able to purchase three of Hunter's letters and thinking that one of them would be of interest to him I sent him a transcript By return came a characteristic note in his clear legible hand telling me how much obliged he was for the chance of becoming familiar with the letter and adding When you come to town be sure to bring it and show it to me but *don't trust it to the post.* Later I saw a good deal of his work at the Middlesex and each time there was something which impressed the visit on my mind His technique as has been said perhaps lacked finesse and in the early days of the rubber gloves he treated them with a certain amount of levity but he was skilful and adept in emergency and his results were remarkable In other people's difficulties too he was a never failing source of help but his precision made his communications short. When the husband of an old patient wrote him a seven page letter describing the symptoms from which his wife suffered and awaited in eager anticipation an equally lengthy reply soon it came but to this effect Dear Mr —— I am quite sure an operation ought to be performed Yours sincerely —— But it was enough That night I reopened the abdomen an uncertain illness was cleared up and recovery followed His memory was remarkable and although it astonished others he seemed to look upon it himself as the most ordinary thing

I am Sir, yours faithfully

G. GREY TURNER.

Huntercombe Manor near Taplow Bucks Dec 22nd 1936

HOSPITAL AMALGAMATION IN LIVERPOOL

To the Editor of THE LANCET

SIR —The Bill to amalgamate the four Liverpool general hospitals in accordance with the report of the Liverpool Hospitals Commission to which reference was made in an annotation on Dec 19th (p 1474) follows closely the provisions of the Birmingham United Hospitals Act 1934 There are however several interesting differences in detail. In the Birmingham Act the distinction between the members of the honorary medical and surgical staffs and the resident medical officers was not so clear as in the Liverpool Bill. The Birmingham Act authorised accommodation to be provided for private patients in accordance with a scheme approved by the Charity Commissioners The Liverpool Bill does not contain any reference to the Private Patients Act of last session and apparently its use will not be necessary especially as there is a clause authorising any members of the honorary medical and surgical staffs of the Hospital to charge fees to paying patients to the Hospital This raises the question whether the Liverpool United Hospital will have power to continue the present practice of allocating a percentage of the receipts from the Merseyside Hospitals Council to staff funds It would seem to be desirable to place the matter beyond doubt by the inclusion of some reference such as that contained in the Prince of Wales's Hospital Plymouth Act.

The governing body at Liverpool will consist of fifty-one members as in Birmingham with the difference that there will be two persons appointed by the University of Liverpool instead of only the dean of the faculty of medicine and two appointed by Merseyside Hospitals Council instead of three appointed by the two corresponding organisations in Birmingham

The Liverpool Bill contains provisions in reference to the honorary staffs which are not contained in the Birmingham Act Vacancies are to be filled by a committee consisting of the members of the Associated Voluntary Hospitals Board other than any medical or surgical members whom the said Board may by resolution exclude together with such medical or surgical members as the said Board may by resolution co-opt and four persons two of whom shall be laymen and two of whom shall be members of the honorary medical or surgical staff of the Hospital appointed by the general committee A layman appointed by the general committee shall be entitled to preside and if necessary to give a casting vote It seems to be an omission in the Bill that it makes no reference to the constitution of the Voluntary Hospitals Board The Bill also gives a definite constitution to the medical board which consists of the honorary medical and surgical staffs and one person two persons and four persons respectively appointed by the dental surgeons pathologists and anæsthetists There is no provision for the representation of any other section of the medical staff such as obstetricians and gynæcologists or radiologists to whom it may hereafter be thought desirable to give separate recognition though there is a power to coöpt within limits of particular offices set forth in a schedule The medical board will have its own chairman and secretary

No rule regulation or recommendation of the medical board shall have any force until the minutes of the meeting recording the same shall have been read to and confirmed by the general committee The medical board shall have the supervision of the medical and surgical work of the Hospital and all matters relating to the purchase of surgical instruments and apparatus shall be referred to the medical board but that board shall not have power to purchase any instruments or apparatus without the previous sanction of the general committee" The medical board will have twelve representatives on the general committee

The extent to which the provisions of the Birmingham Act have been followed in the Liverpool Bill shows that important precedents are being created so that the additional provisions relating to the medical staff incorporated in the latter deserve general attention, especially in places where the conditions are likely to render necessary similar legislation within the not distant future

I am, Sir, yours faithfully,

C E A BEDWELL

King s College Hospital, S E Dec 20th, 1936

CARDIOVASCULAR EFFECTS OF BENZEDRINE

To the Editor of THE LANCET

SIR,—In a very interesting article in THE LANCET of Dec 12th, 1936, Drs Anderson and Scott describe cardiovascular effects induced by benzedrine in six patients out of a series of twenty The patients selected were mild neurotics and psychotics, and it is stated a certain number of normal subjects were also investigated It would be interesting to know what proportion of the series were normals, and if any of the normal individuals complained of pain in the chest palpitations, or faintness Case No 6 had severe collapse eleven hours after the administration of 30 mg of benzedrine It is stated that an examination showed a 1–4 heart-block with an occasional extrasystole Although nothing abnormal was detected in the cardiovascular system before the experiment, it would be interesting to know the result of an electrocardiogram taken after recovery from the attack, to see if any organic lesion of the heart was demonstrated

The effect of benzedrine on normal persons has been investigated at this hospital on members of the resident medical staff The series included eight individuals On the first occasion four of them were given 30 mg of benzedrine by mouth and on a subsequent occasion the other four had 40 mg each by mouth The results after taking 40 mg were little different from those seen after taking 30 mg Blood pressure and pulse rate readings were made every half hour sitting down All cases showed a rise of blood pressure, which reached its maximum in 1½–2 hours and had returned to normal after 4 hours The systolic pressure rose from 20 to 30 mm and the diastolic from 10 to 20 mm The pulse rate in the majority of cases showed a slight increase after ½ hour, but later was slowed in all individuals, and was slowest 1½–2 hours afterwards when the blood pressure was highest

Although the rate was slow while sitting down it was very unstable, and the slightest exertion, such as getting up and walking around, caused great increase in rate The first subjective symptom noted was a slight feeling of the head not being quite clear Flushing of the face was experienced by some, and dryness of the mouth coming on after about one hour by nearly all The only unpleasant feelings noted were by two individuals who on standing up had a transient feeling of faintness In both the pulse rate had suddenly increased to about 130 On sitting down the feeling quickly passed off and the pulse rate in about ten minutes became again slower than normal

The euphoria was well marked in all and after 1½ hours conversation was at a maximum Many interesting and remarkable stories were told, mostly reminiscences of the past All wished to talk and none to listen The drug was taken at 8 P M, and its effect on sleep was well demonstrated The amount of sleep varied from 2–3 hours to none at all.

I am, Sir, yours faithfully,

J H FISHER,

Medical Registrar, General Hospital

Dec 22nd 1936 Southend on-Sea

MORTGAGED PRACTICES

To the Editor of THE LANCET

SIR,—The letter from Mr Carmichael in your issue of Dec 19th, 1936, does not appear to us to be more than a statement that the scheme offered by his finance company is the cheapest and least onerous available to doctors, no matter what the circumstances of the particular applicant may be, or whether he requires the whole or only a part of the purchase price Such an assertion, however, does not necessarily make it true in fact We have been closely into all the various schemes in force and would make no such sweeping statement about any of them. The value given for money is often as important as, or more important than, the exact price paid, the cheapest is not always the best

Plenty of doctors would rather not pay a gross rate of 6½ per cent (with a return of the income tax on the interest at the end of the year and a promise of a rebate of 1 per cent in certain circumstances) when the loan can be secured elsewhere at a net rate of 3½ per cent Plenty of doctors again might prefer a life policy which can be continued after the loan is repaid to one which provides decreasing cover and ceases when the loan is repaid, with the possible risk that health may prevent the doctor from securing life assurance which he is almost certain to need. There are many points which need considering, and true and impartial advice will seldom, if ever, take the form of recommending exactly the same scheme for everybody, no matter what his particular circumstances may be

We are, Sir, yours faithfully,

Birmingham Dec 24th 1936 LEE AND MARTIN LTD

THE FUTURE OF TEETH

To the Editor of THE LANCET

SIR,—Sir Norman Bennett's paper at the recent Public Health Congress is mainly an expose of present conditions and a plea for the intensification of efforts to deal with a deplorable state of affairs But there is no hope that way The dental profession is trying to push back the ocean with a mop, and until the (political) engineer builds a good tariff wall against sugar and white flour, I fear that the blood and tears of children will continue to flow needlessly in our clinics

Nearly 40 years' experience makes me think that dental disease is being neither treated nor prevented in the real meaning of those terms For those who are in earnest about it my experience would suggest the following action Abolish the beet-sugar subsidy and tax sugar like whisky, until sweets and toothache, like spirits and cirrhosis, become the luxuries of the rich Prohibit the importation of white flour and start an unceasing propaganda for well baked wholemeal bread having a legal maximum of water

This by way of a start only. In five years' time we should know enough to look for other causes—if necessary. There is hope in these proposals but none whatever in the present futilities.

I am, Sir, yours faithfully,

Sheffield, 1, Dec. 23rd, 1936. H. J. MORRIS.

DEARER DRUGS

To the Editor of THE LANCET

SIR,—In his recent annual report the chief medical officer to the Ministry of Health commented upon the cost of medicines prescribed for insured persons, which in England worked out at 1*d.* per head more than in the previous year. Sir Arthur MacNalty inferred that the average expenditure per head for the country—namely, 3*s.* 1*d.*—was excessive. I do not think this inference is a fair one. Anyone who is in touch with the drug market will have noted the steady rise in the wholesale prices of drugs, particularly essential oils and other drugs of vegetable origin, which has been going on for a long time past and seems likely to continue. The cost of many commonly prescribed drugs is now far ahead of what used to be considered their normal value. This rise in drug prices is due to various causes, among them the Italo-Abyssinian war, the civil war in Spain, the prolonged drought in the United States, and the steady increase in the demand for vegetable drugs in most parts of the world, especially the United States of America. Let me mention a few drugs out of many which are now much dearer than they were—gentian root, ipecacuanha, ginger, rhubarb, euonymus bark, aloes, hydrastis, buchu leaves; while others such as saffron, ergot of rye, orris root, squill and gum tragacanth have been valued during the past year at figures from twice to six times as high as those of a year or two ago. Among essential oils eucalyptus, star aniseed, clove, and lemon are much dearer than they were and the upward tendency continues. It seems likely too that the wide range of drugs grown in European countries and including such important articles as belladonna, henbane, aconite, and liquorice will continue to advance in price, partly owing to the policy of wholesale druggists in the U.S.A. in laying up larger reserves of European drugs as a precautionary measure in the event of supplies being cut off by war.

In view of these facts it seems clear that if the National Health Insurance drug bill is to be reduced drastic economies in prescribing will have to be practised to a degree which it is possible Sir Arthur MacNalty did not anticipate.

I am, Sir, yours faithfully,

London, Dec. 28th, 1936. F. C. GOODALL.

STANDARD OF ARMY RECRUITS

To the Editor of THE LANCET

SIR,—Your issue of Dec. 19th, 1936, records under Parliamentary Intelligence an account of a speech made in the House of Commons by Sir Arnold Wilson. He is there reported as criticising the rigidity of the medical examination of army recruits and as suggesting a civil inquiry into the working of the present system. I take this speech as an excuse for mentioning a problem which faces me, and I believe other civilian practitioners, from time to time, but not only in relation to the Army.

One is consulted by a patient who has applied to join the Army or some other branch of the Government or local service and who has been informed that his application must be refused unless he has an operation performed for an entirely symptomless varicocele. To perform an operation which the patient does not desire and which at the same time one would not conscientiously advise as being necessary for his health is a most humiliating professional experience; yet to refuse the operation is to debar the patient from joining the service for which he is applying.

My own experience and that of my colleagues whom I have consulted on this point is that a varicocele is a harmless anatomical condition; the text-books support this view. Are there any case records published of atrophy of the testis following a varicocele on which no operation has been performed? Is there any evidence that a condition harmless to a civilian citizen becomes pathological when he joins a police force? Is rejection of an applicant for Government or local service on account of a varicocele based on observation or on tradition?

I am, Sir, yours faithfully,

CECIL FLEMMING.

Upper Wimpole-street, W., Dec. 28th, 1936.

THE DISTRICT NURSE

To the Editor of THE LANCET

SIR,—In your leading article last week on district nursing you say that "it is likely that the Midwives Act of 1936 will further help the midwifery work undertaken by the Institute." As far as I can see the Act as administered by some of the local authorities is going to do a great deal of harm. In some places it almost seems that the county councils are so afraid that perchance general nursing may reap some advantage through the grants for midwifery that they are asking county nursing associations to enlarge their boundaries to such an extent that the midwife will spend most of her time travelling. The midwife's work is based on the number of births a midwife can attend, without due regard to the distances to be covered in sparsely inhabited districts or the nature of the country. Nursing associations were promised help for transport, but in one county at least where a transport grant is given the midwifery grant is so much the less. The reason given for this was that if a car was used more fees would be obtainable. If the transport grant is to be £25 towards the cost of running a car and the grant is to be docked of £25 in a mountainous country where there are few people and fewer births, where are the extra fees to come from to make up £25? Where in the past there has been a struggling district association in existence, supported by voluntary effort and always on the verge of bankruptcy, the powers that be may assess the district at a quarter of a midwife. The association will then get even smaller grants than formerly and will be obliged to raise their nurse's salary and pay for a pension scheme, uniform allowance, and telephones. What the local associations are asking their county offices is: How is it to be done? On making representations to our local authority we are told that they would prefer to take over the whole service themselves. Then what is to happen to the general cases, the pneumonias, the old people, and the dying? Surely these also matter as well as the babies? But there is not enough work or money to run a general nurse as well as a midwife in most rural districts.

I am, Sir, yours faithfully,

HON. SEC. OF A COUNTY NURSING ASSOCIATION.

Dec. 28th, 1936.

GRAINS AND SCRUPLES

To the Editor of THE LANCET

SIR,—Allow a reader of THE LANCET for sixty years a few words in appreciation of the series entitled Grains and Scruples The articles have almost without exception given me great pleasure and if here and there I am moved to criticism I can take this step freely since if I tread on any toes, at present at any rate, I cannot know on whose toes I am treading Anonymity gives the opportunity for criticism which some well known name might prevent

I was prepared to find that the consulting physician and surgeon and the specialist, generally practised writers, could certainly inform and probably entertain me That other types of medical man could do so equally has come as a revelation None of the writers has, I think, surpassed the country practitioner in the quality of his contribution, though personally I have found "A Chronicler" the most interesting, and he has set me wondering about the changing relationship of our medical press to the lay newspapers The latter busy themselves a good deal to day, as "A Chronicler" points out, with medical subjects To what extent, if any, are medical papers likely to retaliate ? Is there any chance that, seeing the intense interest which medical news appears to have for the non medical reader, medical papers will seek an increased circulation by making their columns more easily understood by those who have had no medical training ? Already a certain, though probably quite a small, proportion of these people do actually look at *The Lancet*, or *British Medical Journal*, or both every week At clubs many may be observed scanning their pages, and later they button hole any fellow member who chances to be a medical man and seek explanation As a matter of fact these readers do not find much that they cannot understand without help

There is a notable decrease in the publication of articles with a medical name attached which a year or two ago flooded certain daily newspapers A violent effort had been made from certain quarters to over throw the commonly accepted attitude of our profession regarding publication in lay papers over the writer's name The effort has failed—and a good thing too Sir, I wax garrulous as an old man will, and I must bring my letter to an end by saying I look forward to reading many more of the series Grains and Scruples —I am, Sir, yours faithfully,

Dec 24th 1936 SENEX

OBITUARY

ALFRED GREENWOOD, M D , B Sc Manch , D P H

Dr Alfred Greenwood, who died at Maidstone on Dec 4th, had not long retired from his position as chief health officer for the county of Kent Born at Sheffield in 1873, the son of the Rev E Greenwood, he was brought up at Southport, educated at the Wakefield Grammar School and Owen's College, Manchester, qualifying in medicine at Victoria University and taking the triple Scottish qualification, both in the same year, 1895 After qualifying he held a remarkable series of resident posts in or near Manchester, including surgical, medical, and poor law experience as well as residence in a famous children's hospital Five years after qualifying he entered the public health service, first at Blackburn and then at Crewe, until in 1913 he was appointed to the county of Kent when the late W T Howarth was transferred from Kent to the City of London Dr Greenwood was also school medical officer and chief tuberculosis officer He organised the county schemes for the prevention and treatment of venereal diseases, for maternity and child welfare, and the treatment of crippled children and completed the arrangements for tuberculosis started by his predecessor He was successful in correlating the voluntary work in the hopfields and in supervising the hopper encampments In the summer he arranged a very popular post certificate course for the midwives practising in the county He was keenly interested in cancer research serving on the council of the British Empire Cancer Campaign and acting for a time as chairman of its local executive In 1925 he was one of two representatives nominated by the Ministry of Health to visit Jugoslavia in order to study public health on behalf of the Health Section of the League of Nations Dr Greenwood held rank as Lieut Colonel R A M C (T F) He was mobilised on the outbreak of war in 1914 serving in succession as divisional sanitary officer sanitary officer of the Second Army central force and sanitary officer of the Southern Army He will be remembered as a conscientious public servant with a real talent for detail

PERCY A E RICHARDS, F I C , F C S

THE death occurred on Dec 22nd of Percy Andrew Ellis Richards, a well known analytical chemist, and past president of the Society of Public Analysts. Born in London in 1868, son of Robert Phelps Richards, he was educated at St Paul's School and King's College, London, and later studied chemistry under the late Prof Heaton, with whom he worked, in particular as an assistant at the Charing Cross Hospital There his colleague and contemporary was the late Archibald Vasey, for many years superintendent of THE LANCET laboratory when the analyses of foodstuffs and pharmaceutical preparations, for which we made ourselves responsible, were done on the premises Richards succeeded Heaton in his post at Charing Cross Hospital, where he lectured on pharmacy and analytical chemistry in the medical school As a result he published a guide to the examination in practical chemistry of the English Conjoint Board, in which a well prepared and accurate system of procedure was laid down for the guidance of the students in making ordinary chemical preparations He was appointed public analyst to the parish of St Martin in the Fields, and shortly afterwards to the same post for the borough of Hammersmith and lastly for the City of Westminster He was a member of the council and examiner at the Institute of Chemistry, and as the outcome of much teaching experience he wrote a work on practical chemistry of a larger scope than his previous treatise But he made no attempt here to go beyond the limit of the examinations in preliminary subjects at the University of London, and the book was a sound introduction to elementary methods of qualitative and quantitative analysis He contributed frequently to medical literature, as well as to the *Chemical News* and the *Analyst* while his connexion with Vasey led often to joint work being conducted in THE LANCET laboratory the outcome being the publication in these columns of pharmaceutical notes

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month his name can be seen later in the half yearly index

FROM A PUBLIC HEALTH CLINICIAN

I

Of all hobbies natural history best befits the training and daily life of a doctor And of all branches of natural history ornithology is the best suited Observation in this field must be swift and accurate; with use it becomes more detailed And there is nothing more helpful to our daily work than the power of swift accurate and detailed observation It is not enough to note the passage of a large or small bird with bright or sombre plumage we must note the details of the colouring the colour of wings legs and rump There are also other points such as the manner of perching and the mode of flight or the habits of feeding The habits and idiosyncrasies even of common species provide a constant field of changing interest and training It is not only the eye that is trained but equally the ear The recognition of special notes and songs makes the whole countryside seem more friendly and however long we may have been watching or listening each day may produce some new sound or display some unfamiliar feature

* * *

The drawback to a prolonged study of ornithology is the limited number of British birds so that, after a few years the thrills of new discoveries become fewer but there is always the excitement of seeing some new antic and it is here that other branches of natural history may fill the gaps The observer may turn to entomology or to the more leisurely contemplation of botanical mycological or bryological finds Fortunately no doctor who has to earn a living will ever become a really expert ornithologist or indeed expert in any branch of natural history he must remain a dilettante naturalist The more dilettante the student the more relaxation is he likely to achieve; discoveries which to the expert would be mere dross are to him golden A lifetime can be spent learning in this domain and much will still remain undisclosed or undiscovered Medicine in the broadest sense is similar for forty years we may continue observing and note taking yet the very next day we may detect a clinical entity or a syndrome which we have never before noticed read about or even heard tell of

* * *

Accuracy of observation by ear or eye is a comparatively rare gift and experience of the examination of girl guides and boy scouts tends to confirm this impression How often one reads in their reports that the birds sang sweetly or that the observer saw several beautiful birds how seldom is an attempt made to describe correctly the sounds heard or to give the exact plumage of any one bird even of a robin or house sparrow Small blame to the scouts for they are novates and we doctors are trained observers yet when stories of cases are narrated to us by colleagues we hear of influenza rheumatism or neuritis when what would interest us more would be the exact symptoms of which the patient complained in chronological order and in plain English

Plain English of course may have its limitations and taste in the selection of words is a little uncertain One doctor always employs the word belly when speaking or writing of what we usually call the abdomen She had a pain in the belly says he or perhaps Two days later I opened the belly or again when questioning a patient he may ask have you had any pain or discomfort in the belly ? He does it so nicely and with such a gentle and cultured air that I am almost persuaded that the word should be more freely used and that it is more apt when speaking to a patient than stomach or tummy ; but there prejudice whether inborn or acquired steps in I fall and find myself preferring instinctively abdomen or stomach

* * *

Those who manufacture chemicals and other articles of commerce deluge us with samples of their wares and it is difficult to decide how best to utilise or dispose of these Put them in a cupboard to await an appropriate patient there they are discovered dusty desiccated or mildewed some twenty years later; dispense them to a patient and the result may be disappointing or on the other hand more and more may be asked for our samples become exhausted and we have to buy further supplies at exorbitant prices of something in which we perhaps have little faith If we decide to take them ourselves we may have to wait long for the right illness; or a false parsimony may induce us to take them without delay and so maybe spoil the digestion of an otherwise enjoyable dinner

* * *

It is fortunate that I have made the acquaintance of a Scottish spinster of uncertain age who enjoys swallowing any and every sample that I am prepared to hand over *Lactic acid bacilli* in legion have found their way to her and scores of aperients dispensed as liquid pills or powder Tonics too please her and many familiar green bottles have passed that way as well as cough syrups and the like Highly or less highly concentrated hormones and vitamins delight her be they from corn husk testis ovary or pituitary But best of all did she like a small yellow bottle of concentrated vitamins or hormones and so great was her affection for this tonic that she wished to obtain it privately The chemist offered to supply it at 10*s* 6*d* a bottle this did not please her I wrote the firm and they would let me have it at a professional price of 6*s* 6*d* that still did not appeal to her Then I read the bottle and noticed that the specimen contained 20 per cent of alcohol and explained to her that it was that ingredient perhaps, which made the remedy agreeable If she spent her money I suggested on cooking sherry or even upon beer her outlay would be better repaid I cannot yet say whether my advice was taken

Fortunately some years have passed since we ceased to receive packets of handkerchiefs or fountain pens for purchase or return Handkerchiefs were bought and the price was not unreasonable but a fountain pen I once retained without payment to see what happened After a series of letters which remained unanswered the pen stayed with me to be rediscovered many years later I could not make it serve the purpose which its designer had intended, and so after all it died unused Perhaps similar pens shared a similar fate, and so this method of salesmanship became unprofitable

* * *

Students are led to believe that the general practitioner is a dangerous necessity, seldom other than ignorant and incompetent In practice later, on the other hand, we are told, when consultants address us, that we are the backbone of the profession, up to date, eager, wise, and conscientious It would be serious for our moral welfare if we did not encounter occasional fractious patients who frankly criticise our methods Most of us would acknowledge on reflection that the majority of doctors of consultant rank are more intelligent and better informed than the majority of general practitioners The chief mental difficulty of the general practitioner is isolation He is conversing with and treating those who know nothing about medicine and who accept his dicta and explanations almost without question Gradually the isolated doctor, and in this respect he may be as much isolated in town as country, becomes to believe fervently in himself and in his own dicta, and observation of one or two lucky cases may lead him to believe that his therapeutic methods are superior to those of others The conceit occasionally revealed by such doctors is surprising, yet such a doctor may not be useless to the community A man who believes sincerely in his own powers and his own remedies will have a better and more useful influence over his patients than one who is diffident and hesitant

* * *

The remedy for isolation is within reach of everyone, it is to attend meetings, encounter others, and exchange views These opportunities are provided by local medical societies and the B M A But there will always be a large number who never attend meetings and who deteriorate unconsciously but continuously The best doctors in any locality are those who attend meetings The most dangerous period is the beginning, once the habit of meetings and post-graduate study is formed all goes well, but these habits should be cultivated in the first year of practice or it may be too late

* * *

It is curious how often doctors continue to believe in, and to practise, methods which were foremost in their student days but which have now been largely abandoned It is almost possible to date a man by his methods There will be the vaccine fan turned out in the opsonin days, the country surgeon of a little later date who fixes the abdominal viscera, the man who circumcises all the babies, or blocks up sinuses with gauze, or the one who has one or other special drug for curing pneumonia Yet all these happenings increase the varied interest which medical practice and life provide

PARLIAMENTARY INTELLIGENCE

INSANITY AND DIVORCE

BEFORE the House of Commons rose the Marriage Bill was further considered by Standing Committee A, when Lieut Commander AGNEW moved an amendment to delete the paragraph which provides that incurable insanity after the respondent has been certified a lunatic for at least five years shall form a ground for divorce He said that the proposals of the promoters of the Bill differed very widely from the recommendations of the majority report of the Royal Commission of 1912 The Mental Deficiency Act of 1930 might have altered the situation, but through the majority report very great power resided in the Lunacy Commissioners He regarded the proposals of the Bill as a weakening of that position, and the essential safeguards which the Commission sought to recommend would be entirely lacking Before a petitioner could go to the court under the five-years rule and sue for a divorce, the spouse might leave the mental hospital from time to time and there was nothing in the Bill to stop what they all wanted to avoid, the the procreation of children who themselves might be mentally afflicted This social evil would therefore go on exactly as before Were those that might subsequently recover their sanity to come out and find that a new marriage had been contracted? The very knowledge that this might occur would have a detrimental effect on their recovery while they were in the asylum. He thought it would be wiser to keep the insanity in the same position as total bodily paralysis or epilepsy grave calamities that deprived one partner of all that marriage meant —Mr HERBERT who was in charge of the Bill, replied that the promoters of the Bill intended that proceedings should be served on the King's Proctor, who should refer to the Board of Control They were now inserting a new ground for divorce and the present feeling was that the subsidiary effects and results could be dealt with under Rules of Court which had to be laid before Parliament so that control would be effective

Sir ARNOLD WILSON, who opposed the amendment, said that there were something like 50,000 married persons of unsound mind who were now in institutions in this country and the majority had been there for more than five years Since the Royal Commission sat in 1912 one of the aspects of insanity that had been best established was that as a rule it was not a catastrophic accident comparatively late in life, it was more often inherent, usually coming out long after the marriage took place There was not much ground for believing that there had been any very serious eugenic consequences from the liberation of persons during temporary periods of sanity

Mr LYONS asked why they should take only one kind of disease—disease of the mind—and use that as a ground of divorce? The proposal required the very gravest scrutiny He believed that public opinion was in favour of maintaining the obligation of the marriage tie and not of whittling it away at the will of some new statute designer Such experiments were fraught with danger —Mr RAIKES said that if there were to be any extended grounds for divorce at all insanity had a stronger case than anything else There were thousands of people who had been driven by the present laws into irregular unions

Mr G GRIFFITHS said that there had been more working-class married women pronounced insane since 1926 than ever before That was because of the domestic difficulties from not having the money to carry on the home If a working man's wife was sent to an institution this Bill might be taken advantage of to obtain a divorce after she had been there 5 years She might come out completely cured and find that her husband had remarried. He suggested that the period should be increased from 5 to 10 years

This amendment was defeated by 16 votes to 5

Sir A. WILSON moved an amendment, first, to substitute for the word "insane" the words "of unsound mind" in order to bring the Bill into line with the wording of the Mental Treatment Act, 193

Secondly the amendment substituted for the words has been continuously a certified lunatic the words 'has been continuously under care and treatment' The former words were found to be too narrow because they excluded a criminal lunatic, but included members of the fighting forces who could in certain circumstances be detained without a statutory certification The Bill did not provide for the important cases of persons certified and detained in an institution under a reception order and kept as a voluntary patient after the expiration of the order That class included one in four of all the persons admitted into institutions last year They were none the less of unsound mind because they were admitted as voluntary patients and not under compulsory certification. From the point of view of administration and psychology it was of the greatest importance that they should not do anything to discourage voluntary patients The mere knowledge that under the Act of 1930 the voluntary patient had the right on giving notice to leave probably did more towards bringing about a cure if a cure could be effected, than any other single thing The word incurably remained and the Court would have to be satisfied by the highest medical authorities that the patient was in fact incurable.

This amendment was agreed to

UNEMPLOYMENT ASSISTANCE

Just before the recess Mr **GEORGE HALL** moved the suspension of the Unemployment Assistance (Determination of Need) Regulations in so far as they involved reductions in existing allowances. The Labour Party he said had not in any way withdrawn their hostility to the regulations as a whole and especially to the means test They wished the Government would consider the wider social and economic cost of the paralysed and wretched groups of communities now suffering in South Wales in the North and in Scotland and remember that they were a very heavy off-set to the seeming prosperity of the industrial Midlands, London, and the South Application of the new regulations would not only drive the unemployed still further into the depths of starvation, but would impose new cuts on the already low wages of the employed workers would further destroy family life, would so reduce the purchasing power of the people that small traders and shopkeepers would be driven into bankruptcy, and the already difficult task of the local authorities in those areas would be made impossible In Mountain Ash for instance between 40 and 45 per cent of the insured persons had been unemployed and 80 per cent of the men had come under the operation of the Unemployment Assistance Board In the whole of Glamorgan county they had discovered 0800 children between the ages of 5 and 14 who needed clothes and 13 000 who needed boots But in the memorandum issued by the Board it was stated that reductions in allowances would be necessary Within the next few months some 00 000 persons would suffer reductions.

Mr **BOOTHBY** said he did not believe the agitation in the country about nutrition was a mere stunt There was a tremendous lot behind it They had the authority of medical and scientific opinion which was beyond reproach that about 20 per cent of the population were under-nourished at the present time and if proof was required they found it in the figures of rejections for recruiting particularly in the West of Scotland Children and nursing mothers in the distressed areas were not at the present moment adequately nourished and the cost of that on the national disease bill was very great. He wondered how much of the £20 000 000 spent on disease alone in Scotland was due to the fact that in their childhood so many of the young men and women were under-nourished and badly fed There was no doubt that a blow was going to fall on some of the unemployed and mainly in the most distressed areas. The Government had been asked to introduce legislation to deal with this particular problem and the Chancellor of the Exchequer had promised to do so next May But in the very nature of things that must be long term legislation. Nothing effective could be done for the distressed areas for another year at least—it might be much longer The motion before the House asked that during that unstated period there should be no further penalties imposed. That was a reasonable request What was the point from the national point of view of reducing the purchasing power of the people in the distressed areas by a single penny?

THE LABOUR MINISTER'S REPLY

Mr **ERNEST BROWN** said that the new regulations came into force on Nov 16th and the process of reviewing cases was nearing completion Large numbers of persons had received notices that their allowances would be increased while no applicant had received a notice that his allowance would be decreased as a result of the new regulations These regulations, as the motion really admitted by implication were a considerable improvement on the old ones. Their effect would be to remove some of the inconsistencies of unequal treatment which obtained under the standstill arrangement On the basis of a review of 612 000 cases they had found that they were likely to have more than one-third of the cases receiving increases. Where reductions fell to be made because excess payments not needed were being made the reductions would be made gradually in order to avoid hardship If a man's earnings were less than 25s there would be no reduction from his standstill allowance If his earnings were between 25s and 60s there would be deducted only the amount by which his earnings exceeded twice the amount of his allowance He thought this was a fair rule The Board had told the advisory committees that all households in which more than half of the resources consisted of *some form of income other than earnings* should be excluded altogether as also would be households where the principal resources consisted of the earnings of sisters of the applicant or a married son, or of a more distant relative Applicants with earning brothers and sisters would be included only if their fathers were earning substantial wages The Board had suggested to the advisory committees that in the class of case to be affected the payment made should not exceed by more than 15s or 20s the amount of the applicant's needs as calculated on the new standard. The careful and detailed analysis laid before the House in July seemed to show that the hardships felt under the old regulations had been removed

The motion was negatived by 218 votes to 135

PIT-HEAD BATHS

In the House of Commons on Dec 10th, Mr **GALLACHER** moved:

> That this House in view of the advance that is taking place in housing in health and in hygiene is of opinion that pit head baths have become an urgent necessity for all mining communities and recognising the limited resources of the Miners Welfare Committee and its inability under present conditions to cope with the demand being made upon it expresses the opinion that the Department of Mines should immediately institute an inquiry on the best method of amplifying the finances at the disposal of the Committee and thereby ensure that pit head baths will be established as a recognised part of the equipment of the mines of this country

He said he appealed on behalf of the wives and mothers in miners' homes for the immediate installation of pit baths at every working pit in the country Though the various departments of the State were now doing a great deal to try to cope with infantile mortality and children's diseases they had very much further to go and here right before them there was a danger facing the children that they could immediately remove A young child might be affected by one of the epidemics common to children and the father was forced by the exigencies of the situation to carry into his home coal dust and gases his damp sodden clothes had to be hung up to dry The Royal Commission on Housing in Scotland referring to such conditions in miners' homes had said "The risk to the health of the children is very great" No time should be lost in saving the children from this menace But the miners themselves ought also to be protected They came up from the pits soaking, and then they had to travel home in their soaked clothes for miles It was an intolerable position in which to place any man From 1920 to 1926 only £121,463 had been allocated for baths out of a total of £4 500,000 The 1926 Act imposed upon the Central Committee the specific duty of providing pit head baths at all coal mines, as far as reasonably practicable, and required that the proceeds of the royalty levy should be used for that purpose The 1934 Act laid it down that a sum should be added to the fund that came from the royalty levy providing a total of £375 000 annually for installing baths That was the fund that the Welfare Committee now had at their disposal for baths The Committee, he believed, were working as energetically as possible within the limits of their means But the Committee originally had the whole of the funds, four-fifths going out to the districts and one-fifth being retained for general purposes connected with welfare Then £375 000 was taken away from the general fund for baths, which meant that the fund for welfare had become much less All the time the administrative expenses and the staff were increasing This situation brought all kinds of criticism against the Committee which they did not deserve He urged that the control of the installation of baths should be placed in charge of the Mines Department The Government should make an interest-free loan equivalent to 10 years' income of the fund

Mr **WATSON**, seconding the motion, said that where baths were provided they were told that 90 per cent of the men were willing and anxious to use them He hoped that the motion would be carried unanimously and that they would find the Government sympathetic

Mr **LEWIS JONES** moved the following amendment

> That this House while appreciating the great advantages to the mining community resulting from the provision of pit head baths is of opinion that the report of the Departmental Committee of Inquiry which resulted in special provision for the financing of pit head bath construction by the Mining Industry (Welfare Fund) Act 1934 provides the House with full and sufficient information on this important subject

He said that he appreciated the need for more baths, but he was satisfied that the Welfare Committee were making reasonable progress in providing them, and the district committees were showing increased interest in the movement The continued increase in output in 1935 and 1936 justified the expectation of substantial increases in the income of the Welfare Committee ' With the complete information available in the Departmental Committee's report, with the annual report of the Welfare Committee, and with the improved financial position of the coal industry generally he suggested that the work of the Welfare Committee should be allowed to proceed without further interruption —Mr **ROWLANDS** seconded the amendment He submitted that no case had been made out for demanding an inquiry on this question because all the information necessary was at the disposal of the Ministry at the present time

Captain **CROOKSHANK**, Secretary for Mines, said that he had no statutory responsibility for enforcing anything and the whole question of pit-head baths was one for the Welfare Committee to deal with and he was sure that they would appreciate what had been said in the House that afternoon It was not a shortage of money that was holding up any programmes The Committee had come to the conclusion that it would be possible to speed up to the extent of expenditure from £375 000 a year to the rate of £600 000 for each of the next two years In addition to 182 baths opened, 34 being built and 25 tendered for by the end of this year there would be by the end of 1938 about 10 further baths for which negotiations had already been started and some 55 negotiations for which had not been started, but of which the general idea had been adopted. This would bring the total by the end of 1938 up to 336 baths with accommodation for some 425,000 persons That envisaged considerable acceleration, and since the expenditure concerned ran into rather big figures, that was about the maximum speed possible, but it was not shortage of money that was holding up the programme

After further debate Mr **GALLACHER** asked if the Minister was prepared to give an undertaking that he would consult with the Welfare Committee and with them work out a scheme covering all the applications now before the Committee so that each of the pits would have some idea whether or when they were likely to have an installation

Captain **CROOKSHANK** replied that he was certainly prepared at all times to consult the Welfare Committee The amendment was withdrawn and the motion agreed to

DISTRESS IN THE HIGHLANDS AND ISLANDS OF SCOTLAND

Mr R **GIBSON** moved that the House should call upon the Government to formulate without delay proposals designed to arrest depopulation and poverty among the remaining inhabitants of the Highlands and Islands of Scotland and to provide them with facilities for earning a decent livelihood.

He said that the distress in these areas and the pressing need for remedial measures were keenly felt not only there but wherever descendents of Highlanders lived

After further debate Mr **ELLIOT**, Secretary of State for Scotland, replying to the debate said that great efforts had been made by the Central Government to deal with this problem. In 1935–36 over £1,500,000 had been paid to the Highlands and Islands by Government grants and there was a further £1,400,000 being spent on pensions and unemployment payments The Highlands and Islands medical service, which was a striking success, involved the expenditure of considerable sums and also the maintenance of a very much higher standard of medical service than the area could afford for itself. Though there were still considerable distances over which sick persons had to be brought, that those distances were being shortened each year, that the hospital services were being improved, and that new hospitals were being built Grants were now being approved of over £50,000 for additional general hospitals in Shetland, Lewis, and Orkney, and grants had been made to places like Inverness Infirmary to bring it up to the standard of a full general hospital After referring to the considerable grants made to the Highlands and Islands in respect of roads, education and housing, he said that when they spoke of distress and the danger of the collapse of the future welfare of a whole community they must be careful not to form an exaggerated view of the situation It would be a great disservice to the Highlands themselves if they did so It was well worth noting that the vital statistics of the Highlands were very much better than those of Scotland as a whole The adjusted death-rate in the Highlands was only about four fifths of that for Scotland. The sickness rate among the insured population was also less, being only 70 per cent of the whole country and the infant mortality was 32 per cent lower These were not the signs of a dying and decaying race, but of one that had undergone and was undergoing hardships and required that its lot should be improved, but they did no service to either the Highlands or to their inhabitants to depict them in a scheme of unrelieved blackness and gloom —Mr **JOHNSTON** What about the tuberculosis figures? Mr **ELLIOT** said he had not got those figures with him but the right hon. gentleman would know that the Highland population was susceptible to tuberculosis It was not so much in the Highlands themselves as when the inhabitants migrated to the crowded cities that the rate went up.

The motion was agreed to

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The annual report of the chief medical officer of the Board of Education is the product of the whole school medical service condensed and edited by the medical staff at Whitehall with Sir Arthur MacNalty as the final censor The school medical reports which go back to 1909 show the evolution of the school medical service although that of 1935 is obviously the successor of that of 1934 it is widely different in character from the reports of twenty or even ten years ago

ROUTINE INSPECTION

The most notable feature of the present report is Chapter III which though it bears the title of Routine Medical Inspection is really a reply to criticisms of the service made by Dr H L. Crouk Dr H Herd Dr G A. Auden and others and to a lively discussion at the R S I conference at Bournemouth It is unusual in an official report to find an apology for a government scheme against outside criticism but the constructive nature of the Bournemouth suggestions called for consideration and we much appreciate that this should be given them in the report of the chief medical officer It was not proposed at Bournemouth that periodical routine examinations should be abolished but that there should be greater liberty allowed to modify them by those school medical officers who are admittedly specialists in this sphere of medical work. The answer of the Board is that it sees no reason at present to modify the requirement of periodical inspections but the tone of the chapter in Sir Arthur MacNalty's report leaves the impression that the Board is prepared to modify the schedule if adequate argument is forthcoming for doing so It has been pointed out that though school medical officers of the experience of Drs. Auden and Herd might well be given freedom the majority of school medical officers are juniors who could not be expected to work an adaptable scheme of inspection without the schedule and precise instructions from headquarters. Apart from its insistence on the three periodical routine inspections the Board does allow wide latitude in the conduct of school medicine and following the practice of the Ministry of Health connives at much it does not actually sanction if it is convinced that it is of public benefit

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To the public and to doctors not specialising in school medicine the most interesting chapter of the report is that dealing with nutrition for 1935 was the first year in which the social research in feeding which has been such a prominent feature of the present decade could be put to practical test in the experiment of the milk in schools scheme Nutrition of school children is now assessed in four categories —excellent normal slightly subnormal and bad The groups are undefined and there is some but not much variation in individual ideas of what the headings mean but they are the least confusing available at present and leave open the field for experimental tests of nutrition Children are taller and heavier to-day than they were formerly This is a universal finding It is not necessarily all due to improved nutrition but there is no doubt that the nutrition of our children has improved for all the special tests used show an upward trend So far as we can see at present the milk in schools appears to do what was expected of it but has not done all that it can do from a misunderstanding for which the Board itself is partly but perhaps unavoidably responsible A considerable number of children for whom the milk is necessary fail to get it because they fall between those who can afford to pay for it and those who obtain it free A small group whose parents professed that they were unable to pay and who were not found subnormal by the doctor exists because the Board laid down restrictions on the supply of free milk. Some authorities relentlessly follow the Board's instructions, others practically ignore them generally they are lapsing for there is agreement amongst all political parties that there should be no risk of under nourishment of children which could be relieved by the supply of milk at the public expense Economically the provision is so cheap and malnutrition so dear that the restrictions cost more than the milk. Severe malnutrition is not common and what does exist is largely due to causes other than under nourishment but it is significant that percentages of bad nutrition are generally highest in the distressed areas Durham county showing much the worst count Of the boroughs and urban districts, Mountain Ash U D with 8 4 per cent and Jarrow with 6 7 per cent bad nutrition are notable exceptions to the average of less than 1 per cent. Numerous tests for nutrition are being tried out all of which are helpful but nutrition being a dynamic function can never be fully assessed by static measurements Like everything else in human biology chemistry and physics can give us evidence but it requires a physician to make a diagnosis

RESULTS

In the conclusion Sir Arthur MacNalty discusses the results of the school medical service which has been in operation for 27 years He asks What is the country getting in return for this expenditure? Has the enormous amount of money and time and intelligence given to this function produced an adequate return? The striking improvement in cleanliness and nutrition the growing rarity of the graver diseases such as tuberculosis, and the amount of treatment carried to a successful issue for minor diseases which formerly were neglected is some answer to this but for several reasons, statistically the results appear to be much less good than they are in fact. Some of the defects of children such as refractive errors and low intelligence are physiological deviations which can be relieved but not abolished so these show no drop in figures. In other matters our standard has steadily advanced Thus formerly ear disease meant otorrhœa with visual or olfactory evidence; to-day we have aural clinics to discover the commoner and less obvious disorders of the ear Running nose and the catarrhal conditions which go with it were hardly noticed at all in the early days of inspection; to day, though these are far less common than they were they are an important element in school work

The dental service is not yet fully developed There are about 5 000 000 children on the elementary school roll In 1935 3 360 818 of these were dentally inspected and 2,290 404 required treatment Treatment was provided for 1 474 083 but it is not to be presumed that they all received complete treatment However for the first year in the history to such conditions in miners' homes had said "The risk to the health of the children is very great" No time should be lost in saving the children from this menace But the miners themselves ought also to be protected They came up from the pits soaking, and then they had to travel home in their soaked clothes for miles It was an intolerable position in which to place any man From 1920 to 1926 only £121,463 had been allocated for baths out of a total of £4,500,000 The 1926 Act imposed upon the Central Committee the specific duty of providing pit-head baths at all coal mines, as far as reasonably practicable, and required that the proceeds of the royalty levy should be used for that purpose The 1934 Act laid it down that a sum should be added to the fund that came from the royalty levy providing a total of £375,000 annually for installing baths That was the fund that the Welfare Committee now had at their disposal for baths The Committee, he believed, were working as energetically as possible within the limits of their means But the Committee originally had the whole of the funds, four-fifths going out to the districts and one-fifth being retained for general purposes connected with welfare Then £375 000 was taken away from the general fund for baths which meant that the fund for welfare had become much less All the time the administrative expenses and the staff were increasing This situation brought all kinds of criticism against the Committee which they did not deserve He urged that the control of the installation of baths should be placed in charge of the Mines Department The Government should make an interest-free loan equivalent to 10 years' income of the fund.

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The research work done by the school medical officers is important but not spectacular At the end of the report is a table of special inquiries and reports done in 1935, but this does not give a just idea of the amount of research carried out in field experiment and observation Various special clinics, such as those for rheumatism, goitre, nutrition, &c , are really research stations from which knowledge of disease can be obtained not available to us in other ways and which are helpful in building up the science of human biology upon which our system of medicine rests

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED DEC 19TH, 1936

Notifications —The following cases of infectious disease were notified during the week Small-pox, 0 , scarlet fever, 2053 , diphtheria, 1334 , enteric fever, 21 , pneumonia (primary or influenzal), 982 , puerperal fever, 31 , puerperal pyrexia, 106 , cerebro spinal fever, 18 , acute poliomyelitis, 7 , acute polio encephalitis, 1 , encephalitis lethargica, 5 , dysentery, 29 , ophthalmia neonatorum, 71 No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Dec 25th was 3207 which included Scarlet fever, 988 diphtheria 1069 , measles 18 whooping cough 391 puerperal fever 14 mothers (plus 7 babies) encephalitis lethargica 284 , poliomyelitis 4. At St Margaret s Hospital there were 10 babies (plus 4 mothers) with ophthalmia neonatorum

Deaths —In 122 great towns, including London, there was no death from small-pox or enteric fever, 3 (0) from measles, 5 (1) from scarlet fever, 16 (4) from whooping-cough, 36 (2) from diphtheria, 44 (9) from diarrhœa and enteritis under two years, and 57 (12) from influenza The figures in parentheses are those for London itself

Doncaster reported 3 deaths from scarlet fever Fatal cases of diphtheria were reported from 22 great towns, Liverpool 8, Hull 5, Birmingham 3

The number of stillbirths notified during the week was 254 (corresponding to a rate of 41 per 1000 total births), including 32 in London

PANEL AND CONTRACT PRACTICE

The Capitation Fee for Adolescents

THE Government is proposing to extend medical (not sickness) benefit under the National Health Insurance Act to boys and girls of 14–16 who are in insurable occupations—estimated at about a million The benefit to be offered will be identical with that available to other insured persons except that young persons will not have to wait so long before receiving dental benefit From the practitioner's standpoint the terms will be the same except that as there is no sickness benefit there will, strictly speaking, be no sickness certification At a conference with representatives of the Insurance Acts Committee on Nov 4th the Ministry tentatively suggested a capitation fee of 6*s* (instead of the usual 9*s*) on the grounds (1) that practitioners will have no bother about certificates, and (2) that these adolescents will need less attention than ordinary panel patients The representatives of the Insurance Acts Committee said that they could not for one moment accept this second suggestion—that the medical care of young persons will prove less onerous—and in this they were supported by a leading article in THE LANCET of Dec 5th In a statement of their views the Committee expressed their astonishment that the Ministry should make such a suggestion and said that while the services given by practitioners to young people are different in kind they are more rather than less important than those rendered to older members of the community The Ministry s proposal to remunerate insurance practitioners at a cut rate for these services would damage national health insurance as an instrument of positive health—is opposed to its function of healing established disease—and would not encourage them to give the full preventive and curative service needed at the difficult time of transition between school life and wage earning

It is ' said the Committee "a retrograde and reactionary proposal" Moreover, the selection of a group of insured persons for whom a different capitation rate should be paid was opposed to the principle underlying the existing basis of remuneration and if it were introduced the Committee would have to consider its wider application in national health insurance and especially its application to the increasing proportion of old people in the community and to women

After pointing out objections to direct payment to approved societies for the purpose of dental benefit—which "can only, under existing arrangements, aggravate the existing inequalities in relation to additional benefits"—the Committee went on to question the advantage supposed to be gained by the practitioner by lessening of certification "Although," they admitted, "he will not be required to undertake the actual filling in of national health insurance certificates, his responsibility in so far as certification is necessary for other purposes remains unchanged For example, his employer will require certification of evidence of incapacity in most cases"

On these grounds the Insurance Acts Committee decided that unless an offer of the standard capitation rate, less a deduction of not more than 5 per cent in respect of certification, were made, they would summon a special conference of local medical and panel committees and recommend it not to accept the Ministry's proposals On Christmas Eve the Ministry's reply was received On the general question of the amount of care involved it said that while the Minister "remains satisfied that persons within the age group in question are likely, having regard to their comparatively low sickness experience, to make fewer demands on the services of practitioners than persons of older ages, he does not wish to press this point unduly, since he recognises that in the interests of public health it is desirable that juvenile workers should remain as far as possible under medical supervision " As for certificates, the Minister maintains that account must be taken not only of the actual work of issuing them but also of the extra visits paid by patients merely to obtain them , and he still contends that, despite the possible demands of employers, adolescents will give the practitioner relatively little trouble in certification In all the circumstances, he adds, he is "prepared to provide for a capitation fee of 7*s* 6*d* on the understanding that if the standard capitation fee for adults should be increased or reduced in future the rate for juveniles should be varied proportionately

The Insurance Acts Committee receiving this reply have summoned a conference of local medical and panel committees for Thursday next Jan 7th at 2 P M It will be observed they say that while the original contention of the Ministry that less work will be involved in the care of these young adolescents is not pressed certification has been valued for the purposes of the deduction at 1*s* 6*d* and a capitation fee of 7*s* 6*d* offered The committee will recommend the conference to reject this offer

MEDICAL NEWS

Society of Apothecaries of London

At recent examinations the following candidates were successful —

Surgery—G F C Harvey Univ of Manch., G G Sahasrabuddhe, Univ of Bombay and West London Hosp and J S Wood Univ of Liverp

Medicine—J T Boocock Univ of Leeds and J S Wood Univ of Liverp

Forensic Medicine.—J S Wood Univ of Liverp

Midwifery—J R Audy and J M Lea Guy s Hosp J E R Palmer St. Mary s Hosp and O Rochlin Univ of Melb and London Hosp

The following candidates, having completed the final examination are granted the diploma of the society entitling them to practise medicine surgery and midwifery G F C Harvey J M Lea, and J S Wood.

Royal College of Surgeons of England

A special lecture on the treatment of cardiac ischæmia will be given by Mr Laurence O'Shaughnessy in the lecture theatre of the Royal College of Surgeons on Friday Jan 15th at 5 P.M. Viscount Dawson of Penn president of the Royal College of Physicians, will give a short introductory address

University of Leeds

At the annual dinner of the Old Students Association held on Dec 10th Prof C M Gillespie anounced that the University Grants Committee of the Treasury had voted a sum of £15 000 towards the scheme for providing suitable accommodation for the students union Encouraged by the past and present students action in having collected some £4000 Mr W Riley Smith made the handsome donation *of £25 000 last* June The sum of £50 000 would have been required to carry out the original plans but these may be slightly modified and the work can now be started with confidence It is hoped that the *further sum of £5000 needed for equipment* will soon be forthcoming Though the site that has been reserved will be within the area occupied by the greatly extended buildings of the University it is not far from the medical school and the infirmary and will it is hoped act as a bond of union between the various faculties of the University

International Hospital Congress at Paris

The next International Hospital Congress will take place in Paris from July 6th to 11th in the Arts and Professions Building 9 bis avenue d Iéna Dr René Sand Dr W Alter and Monsieur Sarraz Bournet will represent the International Hospital Association on the committee and a programme of lectures and discussions has been prepared including French German Italian, and English speakers on the national planning of hospital services Other subjects to be dealt with are: hospital visiting; the rights of the hospital in regard to case-histories of patients general nursing; hospital finance and publicity; and the hospitalisation of mental cases Arrangements are being made to organise a visit of several days duration to the Lyons district for the week immediately preceding the congress The hospitals of Lyons the sanatoria of the Alps and the hospices of Beaune would be among those visited During the congress afternoon visits will be made to large hospitals including the Cancer Hospital at Villejuif The secretary of the association may be addressed at 87 Lord-street Liverpool

Pharmaceutical Society of Great Britain

A meeting of this society will be held at 17 Bloomsbury square, London W C. on Tuesday Jan. 12th at 8 30 P M when Dr F B Parsons, anæsthetist to Addenbrooke s Hospital Cambridge will lecture on anæsthetic agents

German Society for Study of the Circulation

The tenth congress of the Deutsche Gesellschaft für Kreislaufforschung will take place at Bad Nauheim on March 13th and 14th under the presidency of Prof E Stadler The main subject for discussion will be circulation and inner secretion and the principal speakers will be Sir Henry Dale H Rein (Göttingen) F Schellong (Heidelberg) W Haupt (Jena) M Bürger (Bonn) and G W Parade (Breslau) Those who wish to attend should communicate with Prof E. Koch at the Kerckhoff Institut Bad Nauheim before Feb 1st

Post-graduate Courses in Berlin

International post-graduate courses are to be held in Berlin on the following subjects internal medicine (Feb 22nd to March 6th); surgery and industrial diseases (April 5th to 10th) urology (April 12th to 17th) radiology (April 16th to 23rd) orthopædics (April 19th to 24th); tuberculosis (May 3rd to 8th); and homœopathy (April 5th to 30th) Monthly courses in all the special departments of medical science including practical work, will also be held. Particulars may be had from the information bureau of the Kaiserin Friedrich Haus Robert Koch Platz 7 Berlin N W 7

Appointments

BRUCE, H W., M D Lond F R.C.S Eng has been appointed Principal Medical Officer Central Administrative Staff of the London County Council

HOLDERNESS R C. M.B Lond D P H, Medical Officer of Health and School Medical Officer for Loughborough

St Mary's Hospital for Women and Children Plaistow—The following appointments are announced —

GORDON W H, M D Glasg D O M.S. D I H Hon Ophthalmic Surgeon;

APPLIN H W M B Lond D O M S Hon Ophthalmic Surgeon and

ELGOOD C. D M Oxon M R C.P Lond., Hon. Assistant Physician

Certifying Surgeons under the Factory and Workshop Acts Dr D H S Boyd (Hungerford District Berkshire)

Medical Referee under the Workmen s Compensation Act 1925 D L DAVIES M.S. M D F R C.S of Cardiff for all County Court Districts at present comprised in Circuit Nos. 24 and 30 for Ophthalmic Cases

Subject to confirmation.

Births, Marriages, and Deaths

BIRTHS

LLOYD STILL.—On Dec 31st at Welbeck street W the wife of Captain R M Lloyd Still of a son

MARRIAGES

GRACE—DISNEY.—On Dec 19th at All Saints Church Ottawa Archibald John Grace, F R C.S. to Mary Kathleen younger daughter of the Rev R B Disney of Lydon Rugby

JOLLIFFE—WALLIS.—On Dec. 19th quietly at Christ Church Folkestone, William Anthony Jolliffe Surg.-Comdr R N to Eileen Mary Wallis.

DEATHS

BERRY.—On Dec 14th at Southport Australia Robert Newton Berry M R.C.S Eng J P eldest son of the late Thomas Darby of Curry Rivel Somerset, in his [illegible] year

BOWSER.—On Dec 27th at Penrith J Edward Bowser M B C M Edin

DAVIES.—On Dec 25th at Kingston Hill, Percy Vernon Davies M R.C.S. Eng, Medical Superintendent of the Kingston and District Hospital

GODSON.—On Dec [illegible]th, at Blurring Crags Windermere Francis Arthur Godson M B Camb

HASLACHER.—On Dec 26th, suddenly at Arosa, Switzerland Francis Joseph Maria Haslacher M B Lond., F R C S Eng of Burton-court Chelsea aged 63

LENDON.—On Dec [illegible]th at Holland Park-avenue W Edwin Harding Lendon D M Oxon

MARTIN.—On Dec 22nd in London Edward Fuller Martin M D Edin of Weston-super-Mare in his [illegible]th year

SAINSBURY.—On Dec 29th Harrington Sainsbury O B E M D., F R C P Lond in his [illegible]th year

TIDBURY.—On Dec 22nd at Woking Lieut.-Col. Jam[illegible] O B E. R.A.M.C. retd

N B.—A fee of 7s 6d is charged for the insertion of Births Marriages and Deaths

NOTES, COMMENTS, AND ABSTRACTS

PRECOCIOUS PEOPLE *

By C R Croft, D M, M R C P
MEDICAL REGISTRAR AT THE PRINCE OF WALES'S HOSPITAL PLYMOUTH

There is a French proverb to the effect that "It is not sufficient to run fast, you must also start in time" On the other hand it is said that the precocious child is like an early riser, conceited all the forenoon of life, stupid and uninteresting all the afternoon and evening It seems to be a popular idea that those whose mental powers develop precociously in childhood are closely related to the degenerate, imbecile, and insane, and that they come to no good or die prematurely or unhappily Unfortunately medical literature provides only a few studies of precocity and these are mainly devoted to precocity in the sexual sphere

Of the various forms of intellectual precocity, the first may be called "normal," because it is merely an early manifestation of mental development of the highest adult type—sometimes rising towards what is called the *intellectus universalis* Another form is the one sided precocity in which a single faculty is exalted at the expense of others, as in *idiots savants* Thirdly there is the morbid or forced precocity, "psychasthenic precocity," the result of over-pressure and likely to be barren It was of this type, which he related to what we know as the "acidosis type," that Guthrie remarked "The precocious child is not necessarily a genius, but by careful management he may at least be prevented from becoming a failure" Fourthly there has long been a text-book tradition that tumours of the pineal gland are associated with precocious mentality

The Universal Intellect

Of the first group, having the intellectus universalis, Goethe is quoted as the finest example At nine he understood German, French, Latin, Greek, and had learnt Italian incidentally by hearing his sister take lessons in the language while he himself was engaged in his own studies One teacher claimed him as a predestined man of science, another as a brilliant artist, a third as a theologian, a fourth as a courtier, a fifth as a diplomat, and a sixth as a jurist, and it is true that in most of these rôles he excelled , though it is curious that apparently no one predicted that he would be a poet It is of Goethe that Napoleon said, "voilà un homme" It is interesting to note that at the age of 17 he was confined to bed for many months as a result of hæmorrhage He died at 83

Next we may take Dr Thomas Young who died at 56 At 2 years old he could read fluently and before he was 4 he had read the Bible twice. Before leaving school at 13, apart from the standard Greek and Latin of the day, he had got through six chapters of the Hebrew Bible, had learnt to use the lathe, and had made a telescope and a microscope The Italian, Persian, Syrian, and Chaldee languages all occupied his attention, and later he added Samaritan, Arabic, Turkish, and Ethiopian. Despite his knowledge of natural philosophy he was one of the less successful products of St Bartholomew's Hospital, and his later activities included the discovery of the undulatory theory of light, the deciphering of Egyptian hieroglyphics, the ascertaining of the length of the seconds' pendulum, and the superintending of the nautical almanac

Such recitations of virtue unlike the recitation of vice become tedious , but I cannot leave the subject without quoting the astonishing story of a boy called Clench, who was examined at the age of 11 by Pepys and Evelyn together The following is a quotation from Evelyn's diary —

> "There was not anything," Evelyn says, "in chronology, history, geography, astronomy, courses of the stars, longitude, latitude, doctrine of the spheres, courses and sources of rivers, creeks, harbours, eminent cities boundaries and bearings of countries, not only in Europe but in any other part of the earth, which he did not readily resolve and demonstrate his knowledge of He was not only able to repeat the famous things which are left to us in any of the Greek or Roman histories, Monarchies, Republics, Wars, Colonies, exploits by sea and land, but all the sacred stories of the old and new Testament, the succession of all the Monarchies, Babylonian, Persian, Greek, Roman, with all the lower Emperors, Princes, Heresiarchs, and councils,—what they were called about, what they determined , or in the controversy about Easter, the tenets of the Gnostics, Sabellians, Arians, Nestorians , the difference between St Cyprian and Stephen about rebaptization, the Schisms"

He answered questions on synchronisms, Olympic years, civil laws, and on the digest and code, and gave a stupendous account of both natural and moral philosophy, and even in metaphysics. "He was perfect in Arithmetic, Latin authors and French, and was newly entered into Greek." "He was as beautiful and lovely in countenance as in knowledge," and appears to have had very pleasant manners The only criticism one can level against this examination is that it took place at the Admiralty, and after dinner I have been entirely unable to trace the boy's subsequent career His father who was a doctor was murdered in his coach and that is all I can find out about him. Evelyn's own son, who died, it seems, of malaria as a boy, had something of the same brilliance, and his achievements are also recorded.

Taking a few great names at random we find marked precocity in John Stuart Mill, who died aged 67, in Leonardo de Vinci, who died at the same age, and in Sir Christopher Wren who died at 91 Isaac Newton had the three great discoveries conceived in his mind before he was 24, and died at 75 Other great men obviously very precocious, but whose records are less complete, include James Watt (83) , Haller who besides his scientific achievements—he first appreciated the mechanism of respiration—was also an administrator and a poet (70), Bacon, that wisest, brightest, meanest of mankind (65) , and Aristotle (62), Galileo (78), and Grotius or van Groot (62)

Following the work of James Sully, Guthrie points out that the order of development of mental precocity follows the normal development of mental faculties. These may be placed in three groups first, those subserving sensory impressions, in which precocity is shown by musicians and artists , secondly, faculties dependent on the formation of mental images, illustrated by the poets and fiction-writers and lastly, faculties dependent on the formation of abstract ideas, which are exhibited by the philosophers. In precocity musicians are the most striking and philosophers the least, while the poets and fiction writers are intermediate, and scientists appear to fall between the second and third groups

One sided Development

At one end of the scale there is exultation of all faculties, the intellectus universalis , at the other end is great development of one faculty while others are in abeyance It is here as I have said, that we find the idiots savants These have been studied by Langdon Down, and he quotes remarkable cases where there was great aptitude only for mental arithmetic and calculation, or mimetic faculty, manual skill and dexterity, or musical ability

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* Based on a paper read to the Plymouth Medical Society on Nov 13th 1936

A striking example of this kind was Blind Black Tom of Boston, Massachusetts He was born a slave in 1850 a blind imbecile of the lowest negro type coal black, with protruding heels, ape-like jaw and blubber lips constantly open. At 12 he was exhibited all over the State as a musical prodigy Although incapable of understanding the simplest conversation, and like a child of 3 in conduct he had a large repertoire of classical and operatic music which he played entirely by ear He could repeat any piece of music after once hearing it played and could supply the bass to the treble of music heard for the first time. One of his turns was to play seated with his back to the keyboard. His memory was astonishing he could repeat a conversation fifteen minutes in length without loss of a syllable yet without understanding a word of it It was purely an auditory memory that compares somewhat with the calculating prodigies.

From abnormal types of this kind we work upwards to the men of brilliant qualities whose faculties lie in some special direction *Musicians* supply the most surprising and constant examples; in fact it may be said that only one great composer—namely Wagner—failed to show a very early bent

It would be tedious to enumerate instances of musical precocity Mozart played minuets at 4 and in his fifth year he composed concertos Schubert was composing at 11, and even the backward Wagner at the age of 15 became inspired with an overpowering passion for the art after hearing Beethoven symphonies Mendelssohn first played in public at 0 and wrote his first work at 11 There is of course among musicians a very strong hereditary talent of which Bach is perhaps the most remarkable instance, the family being important in the history of music for two hundred years. Of forty composers whose records are collected by Sully thirty-eight (05 per cent.) showed great bent before they were 20; among twenty seven of them ten began composing before 15 fourteen between 15 and 20 and only three after 20[4]

Mathematicians seem to come next; that is those with the power of calculation independent of profound thought—another type of idiots savants. Those capable of rising to greatness in this direction must clearly have a full share of the intellectus universalis but one or two examples of the calculating type may be of interest. It seems possible that the power of rapid calculation too rapid to be based on a process of reasoning is related in some way in its mental process to the musicians control over the musical scale, and may be compared with musicians tone-images The scale of figures is of the same kind as the scale of musical notes

George Bidder who died in 1878 at the age of 74 was perhaps the most celebrated calculating boy His history is of some interest. He was born at Moretonhampstead and his father took him round on exhibition. From this he was rescued by Sir John Herschel and sent to school at Edinburgh He became connected with the development of the railways *in England Belgium and Scandinavia* and his principal memorial is Victoria Docks, London which he designed He was also a founder of the Electric Telegraph Company He is said to have been unsurpassed for calculation, but clearly his work does not lie in the realm of genius.

Painters can be placed next with sculptors Much recitation of their precocity would be boring but a remarkable example is George Morland who is said to have taken pencil and crayon in hand as soon as he left the cradle. Sketches of his at 4 5 and 0 were exhibited at the Society of Artists Common ages for the production of notable work vary from 0 to 14 and among the young artists may be mentioned Montegna Titian Tintoretto Michael Angelo Murillo Holbein Sir Thomas Lawrence Turner Ingres Wilkie, van Dyck and Rubens. Of sculptors can be mentioned Canova and Flaxman.

Of fifty-eight artists forty two (75 per cent.) showed decided skill before 15 years and 80 per cent before 20 In a group *of forty two, twenty-eight* (07 per cent.) were famous before they were 25 None can be traced to whom fame came after 40 years.

Among the *poets* great precocity is seen in Goethe, de Musset, Victor Hugo Cowley Pope Byron, and Coleridge Elizabeth Barrett Browning read Homer in Greek at 8 and wrote poetry at the same age Of 40 poets 66 per cent wrote before 20 92 per cent wrote before 80 and 56 per cent were famous at 25

Novelists—Remarkable precocity was shown by Scott Dickens Lytton Balzac, and Hoffmann also the Brontës and Miss Burney Of twenty-eight novelists 75 per cent showed power before 20 but there are a number of instances of late exhibition of power of whom Defoe, de Morgan, Hardy and Conrad come to mind Although promise is shown thus early in novelists their fame is delayed though 80 per cent. have reached distinction at 40

We then turn to *scholars* and *historians* and here are again approaching the pure intellectus universalis unaccompanied by special development of talent Nevertheless one factor is of special importance in this group and that is the power of memory Macaulay is one of the most famous examples of this At the age of 4 he was taken to the Orford Collection and he remembered the catalogue for ever after Before he was 8 he had written a compendium of universal history and other heavy works. Of art he confessed himself quite ignorant and he recoiled from mathematical studies Many scholars showed similar traits. Memory is the foundation of scholarship and the secret of success in *examinations It may be said that no great man* ever had a bad memory but a good memory does not make a great man.

As examples of precocity in scholarship may be mentioned Grotius, Porson, Macaulay Thirlwall and Gibbon. The records of a group of scholars shows that 83 per cent were definitely precocious and while only 20 per cent achieved distinction at 25 90 per cent were recognised at 40

The next in the scale show a larger infusion of intellectus universalis—the *men of science* Among them are many instances of juvenile distinction Most of them produced outstanding contributions to knowledge in their early twenties Galileo as a boy discovered that the beats of a pendulum are isochronous. Haller the father of physiology was exceedingly precocious; and so as I have said already were Isaac Newton and James Watt Naturalists are similarly endowed. Linnaeus and Cuvier are examples of these and although Harvey did not publish his discovery until the age of 50 he expounded it 12 years before this. Benjamin Franklin making his first and this a discovery of the first order at the age of 50, is almost unique He is also peculiar in being one of the few great discoverers who died insane.

It is calculated that 75 per cent of men of science have shown distinct promise before 20 and 70 per cent are famous at 30 In about 8 per cent only was fame delayed until after 40

Among *philosophers* Berkeley is the most astonishing example His New Theory of Vision was published at the age of 21 but conceived at 18 Heine and J S Mill are also instances of precocious mentality Leibnitz was busy at 17 Many however only achieved distinction after 50 such as Descartes Hobbes and Locke with Kant at 40 Of a group of thirty-six only 51 per cent produced work before 20 and 75 per cent under 30, while 23 per cent had to wait for renown until they were past 50

Summarising the results of an analysis of this kind we find that distinct promise is shown before the age of 20 as follows —

Musicians	95	Poets Novelists Men of Science	7
Artists	80		
Scholars	83	Philosophers	[illegible]

Finally we come to the people who may be called *leaders of men* This group includes military, political, and industrial leaders, and their characteristics are peculiar, for history is singularly silent as regards their early precocity, though their great work is usually completed at an early age, and if they survive this period their reputation is apt to suffer An exception is Chenghis Kahn—perhaps the greatest conqueror the world has seen—who did not begin his greater campaigns until the age of 40, but died, still a campaigner, at the age of 65, with an empire extending from the Dnieper river to the China Sea Alexander the Great on the other hand began his career of conquest at 20 and his work was done at 32 Cæsar's main activity extended over about 12 years until he was murdered at 56 Napoleon was not particularly distinguished as a young officer His active period extended over only 20 years and he was only 46 when Waterloo was fought Wellington —" my dull boy Arthur " as his mother called him—was 55 on the same occasion Marlborough's great period was 46–50 Charlemagne finished fighting at 55 and died at 72 Nelson died with his work done at the age of 47 The gallant escapades of his youth, which largely won his recognition, were partly dependent on the fact, as he himself admitted, that he had no sense of fear Mussolini, who is 53, was unheard of more than 15 years ago Hitler is 47 and has only been known outside Germany for some 11 years It is clearly not the man who plods with peacetime professional grace to the top of the tree who will be the great war commander

It seems appropriate to consider why the biological details of persons of this group should differ so markedly from those of the other groups, whose names like theirs will ever be on men's lips I see no other alternative than to regard them as of a fundamentally different biological type in their achievements

The Physical Side

We turn finally to the physical aspect of precocious individuals There are two main clear cut groups—namely, those with pineal tumour and those with suprarenal tumour There is no doubt that precocious sexual development is a definite clinical sign in tumours of the pineal gland, exhibited as enlarged genitalia in cases occurring before puberty, as was first shown by Ogle in 1899 Recent experimental work has confirmed this Hanson reports from experiments in rats that if a pineal extract is injected into rats and this injection continued through nine or ten generations there is a progressive acceleration in development of size and of sexual maturity It seems that a strong case is being made for including the pineal gland among the endocrines What evidence is there that the pineal affects mental development? It is at present clinical rather than experimental Horrax and Bailey in 1925 described 12 cases of pineal tumour from Cushing's clinic Of these cases 5 were developed before puberty and 4 were in boys Of these 4 boys 3 showed mental precocity and they deserve description

1 Aged 6 "Developed exceptionally well Tall for age, genitalia normal "

2 Aged 11 Full sex characters and deep voice, "accompanying his physical and sexual maturity there was a corresponding intellectual maturity in advance of his age "

3 Aged 3 Two teeth at 2 months, seven teeth at 4 months talking at 8 months, walking at 9 months Extremely intelligent and far advanced for his age Learned to ride a velocipede and had been roller skating during this his third year "

Further cases of pre-puberty pineal tumours are recorded, to a total of 11 All are in boys and 6 showed mental precocity Perhaps the ancients were not far wrong in regarding the pineal as the seat of the soul

The relationship of precocious sexual development to suprarenal tumours was first established by Bulloch and Sequeira (1905) Their paper describes 12 cases of precocious sexual development with suprarenal tumour of which 10 were female and 2 male Of 13 further cases of tumour without precocious development, 8 were female, 4 male, and 1 of doubtful sex In a further collection, by Jump, Beates, and Babcock, of 18 cases, 14 were girls and 4 boys They remark "some showed mental precocity, though the majority were probably mentally dull "

So far as sexual precocity is concerned, it seems that in girls the condition is usually associated with suprarenal disorder, while in boys the association is more commonly with a disordered pineal gland, and mental precocity is often present also I do not propose to draw any conclusions from these facts But if speculation were permissible one might visualise not only a time when our mental deficients will be rendered normal with pineal extracts, but ordinary intelligence may be made extraordinary by the same means Let us hope, then, that its use will be carefully regulated. The idea of a Leonardo de Vinci to paint your house a Wren to mend it and a Macaulay, a Lenin, and a Hitler on the parish council cannot be anything but a nightmare

I wish to record my thanks to Mr J S Shields of the B M A library for his great help in securing the variety of books for which I asked him, often from libraries other than his own Also amongst the shades, I must thank in particular those of Dr L G Guthrie and Prof James Sully, whose work has been freely used

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THE PUBLIC AUTHORITIES PROTECTION ACT

THE Law Revision Committee, appointed by the Lord Chancellor to consider the alteration of legal maxims and doctrines in the light of the statute law and judicial decisions, has produced a fifth interim report (Cmd. 5334, H M Stationery Office 9*d*) which has a possible bearing on the liability of medical officers The Committee has been delving into the uninspiring mysteries of the statutes of limitation which impose various complicated time-limits on the right to bring legal proceedings After a prolonged examination of the general limitations which no layman will lightly essay to comprehend, the report deals with the time-limit under Section 1 of the Public Authorities Protection Act, 1893—a statute not infrequently pleaded in defending actions arising out of treatment in local authorities hospitals

The section relates to proceedings, whether criminal or civil, against any person for any act done in pursuance of an Act of Parliament, or of any public duty or authority, or in respect of any alleged neglect or default in the execution of any such act, duty, or authority Such proceedings shall not lie or be instituted unless begun within six months after the act, neglect, or default complained of, " or, in the case of a continuance of injury or damage, within six months next after the ceasing thereof." The " continuance of injury or damage," mentioned in the passage quoted above in inverted commas, has been interpreted by the judges to mean the continuance of the act which caused the damage There are other complications which the curious may pursue in the reports of cases like Venn *v* Todesco (1926, 2 K.B 227) where the medical officers of the Croydon Borough Hospital were said to have been at fault and Harnett *v.* Fisher (1927 A.C. 580), which indicated the possible clash between the Lunacy Act and the Act of 1893.

Be those problems what they may, the Law Revision Committee now recommends that the six months time-limit under the Public Authorities Protection Act 1893 should be enlarged to twelve. The policy of the 1893 Act, it says, is quite clear—namely, to protect absolutely the acts of public officials, after a very short lapse of time, from challenge in the courts. The Committee cryptically remarks that such a policy might be justifiable in the case of important administrative actions where serious consequences might follow if the actions were impugned after a long interval. But the real use of the statute has been found to lie in protecting "cases of negligence of municipal tram drivers or medical officers and the like." This slightly contemptuous description of the classes of public servant concerned is followed by the observation that "there seems no very good reason why such cases should be given special treatment merely because the wrong-doer is paid from public funds."

The suggested extension of the time-limit under the 1893 Act is the more striking because the Law Revision Committee elsewhere in its report is mainly recommending reductions rather than extensions. The general object of the Statutes of Limitation, as the report makes clear, is not merely to prevent delay in the making of claims; they aim at putting a certain end to litigation and at preventing the resurrection of old claims, whether there has been delay or not. Even a medical officer (who, after all, does not practise for private profit) may be at a disadvantage in defending himself against claims for alleged negligence when they arise out of some *brief incident of a busy day more than six months* before.

FIRE PRECAUTIONS AT HOSPITALS

TEN years ago the management committee of King Edward's Hospital Fund for London took counsel with the chief officer of the London Fire Brigade about the precautions desirable to avoid the danger of fire in hospitals or to mitigate its results. The result was the issue of an important memorandum. Happily fires occur very rarely in London hospitals, but it requires day-by-day vigilance to forestall the risk, and to this vigilance the Hospital Fund's memorandum has been a useful stimulus. The memorandum has now been revised up to November, 1936, and can be obtained from George Barber and Son, Ltd. (23, Furnival-street, London, E.C.4. 6*d.* post free). We take this opportunity of extracting from the memorandum the steps to be taken in case fire *did* break out. These are Items 55 to 62. Item 54 dealt with the arrangements for a responsible official to be informed at the same time as the fire brigade is summoned.

> Upon the discovery of a fire all doors and windows in the vicinity should be kept closed as far as possible in order to exclude draught.
>
> The person discovering the fire should, after having made sure that the alarm has been given and that the fire brigade has been summoned, *attack the fire by means of the* appliances available.
>
> If hydrants are provided, the hose should be extended from the nearest hydrant, care being taken to keep the hose free from kinks; but the water should not be turned on unless it is evident that the extinguishers and fire buckets are insufficient to extinguish the fire.
>
> If the fire is of an electrical nature, sand only should be used in the first instance, and the current should be cut off.
>
> For oil, spirit, and fat fires, foam type extinguishers should be used.
>
> For a person's clothing alight, or if the fire is small, wraps, blankets, rugs, &c., should be used.
>
> Nurses on duty should move patients from the proximity of the fire or if necessary evacuate the ward. Patients may be removed on bedding if essential, but beds or furniture should not be removed.
>
> The officers who have been previously detailed for the purpose should proceed to the various wards, &c., in order to allay any tendency towards panic, while the remainder of the staff should proceed to whatever stations have been allotted to them, or should leave the building.

A NEW HEARING AID

THE type of hearing-aid in which amplification is obtained by means of thermionic valves is deservedly becoming more popular. It has several advantages over the more familiar simple microphone type, among which are improvement of hearing at a distance, greater freedom from distortion, and (most important) the ability to increase the amplification at any desired part of the scale. The disadvantages of size and weight have recently been lessened by improvements in design, and a new model submitted to us by Messrs. Auraphone Ltd., of 120, Wigmore-street, London, W.1, is very compact, being contained in a neat box measuring 6¼ × 4¾ × 1 7/16 in. Two valves are employed, actuated by a dry high tension battery and a small low tension accumulator, for which a trickle-charger can be provided. The tone-control is adjusted by a recessed screw accessible with a screwdriver, and is not intended to be moved by the patient. For the receiver a specially packed carbon-granule microphone is employed which operates in any position, and a choice is available from six microphones having different degrees of power and freedom from background noises. The standard earpiece is light and neat, and is held in position by a spring band, or a midget earpiece may be used, of which there is a great variety to ensure a comfortable fit in the concha; alternatively a bone-conductor may be employed, and this is provided with a more powerful spring band to ensure good contact. The case may be carried by a sling worn over the shoulder under the coat, by a strong clip fixed to waistband or braces, or in a lady's handbag with space provided for receiver and earpiece as well as for handkerchief and other necessaries. The model examined worked very well with a minimum of distortion; the design has been carefully thought out, and the price, 12 guineas with the standard earpiece, is a moderate one. The instrument may be taken on trial before purchase—an important provision which should be, but is not, always observed by makers of hearing aids.

LECTURES ON AIR-RAID PRECAUTIONS

THE London Post Office Corps of the St. John Ambulance Brigade have arranged a course of lectures which will be held at Marylebone Town Hall on Fridays at 8 P.M. from Jan. 15th to Feb. 12th. The subjects to be dealt with include the effects of weather and topographical features, the classification of gases and their appropriate first-aid treatment, protective clothing, decontamination, and protection of the eyes and lungs. Demonstrations of how to use gas mask Mark IV, and how to arrange for collective protection and protection in rooms will also be given. The fee for the course is 5s., and application for admission should be made to the divisional superintendent, 55/1 W.D.O. Division, St. John Ambulance Brigade, Western District Post Office, W.1.

THE CIBA CALENDAR

THE calendar issued by Ciba Ltd., 40, Southwark-street, S.E.1, for 1937 combines the function of a monthly and daily calendar in a convenient and practical manner. The days of the present and succeeding months are shown clearly on each page and ample space is left for entries. The leaves are mounted in the form of a file on a pencil stand which can be placed on the desk.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole street, W

TUESDAY Jan 5th

Orthopædics 5 30 P.M. (Cases at 4 30 P.M.) Mr Alan Todd 1 Case for Diagnosis 2 Protrusio Acetabuli Mr H J Seddon 3 Slipped Femoral Epiphysis Mr H J Burrows 4–6 Operations for the Correction of Madelung's Deformity

WEDNESDAY

Surgery 8 30 P.M. Dr A M Stewart Wallace Post-operative Gangrene of the Skin Mr V H Riddell Peripheral Embolectomy Mr W A Jackman Terminal Ileitis

FRIDAY

Ophthalmology 8 30 P.M. (Cases at 8 P.M.) Mr E Wolff and Mr T Keith Lyle Hemispherical Formations in Bowman's Membrane Mr Arnold Sorsby Mr A Elkeles, Mr G W Goodhart and Mr I B Morris Experimental Staining of the Retina in Life

WEST LONDON MEDICO-CHIRURGICAL SOCIETY

FRIDAY Jan 8th —7 30 P.M. (De Vere Hotel, Kensington) Mr Eric Pearce Gould and Mr C T Le Quesne The Defence of Medical Negligence

WEST KENT MEDICO CHIRURGICAL SOCIETY

FRIDAY Jan 8th —8 45 P.M. (Miller General Hospital Greenwich), Clinical Evening

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane road W

WEDNESDAY, Jan 6th —Noon clinical and pathological conference (medical) 2 30 P.M., clinical and pathological conference (surgical)

THURSDAY —Noon, clinical and pathological conference (obstetrics and gynæcology) 2 30 P.M. Dr Duncan White Radiological Demonstration 3 30 P.M., Mr Bright Banister Cæsarean Section

FRIDAY —2 P.M. operative obstetrics 2 30 P.M., Mr W B Gabriel Surgical Diseases of Rectum 3 P.M. department of gynæcology, pathological demonstration

Daily 10 A.M. to 4 P.M., medical clinics surgical clinics or operations, obstetrical and gynæcological clinics or operations

WEST LONDON HOSPITAL POST GRADUATE COLLEGE, Hammersmith W

MONDAY Jan 4th —10 A.M. skin clinic 11 A.M. surgical wards 2 P.M. operations, surgical and gynæcological wards medical surgical and gynæcological clinics 4 15 P.M. Mr Arnold Walker Carcinoma of the Cervix

TUESDAY —10 A.M. medical wards 11 A.M., surgical wards 2 P.M. operations medical surgical and throat clinics 4 15 P.M. Mr Woodd Walker Fractures of the Femur

WEDNESDAY —10 A.M. children's ward and clinic 11 A.M., medical wards 2 P.M. gynæcological operations medical, surgical, and eye clinics 4 15 P.M., Dr P Manson Bahr Dysentery and Colitis

THURSDAY —10 A.M. neurological and gynæcological clinics Noon, fracture clinic 2 P.M., operations medical surgical, genito urinary and eye clinics 4 15 P.M., Mr Davenport Eye Lesions in Venereal Disease

FRIDAY —10 A.M. medical wards skin clinic Noon, lecture on treatment 2 P.M. operations medical, surgical and throat clinics 4 15 P.M., Dr H W Post Demonstration of X Ray Films

SATURDAY —10 A.M. children's and surgical clinic 11 A.M., medical wards

The lectures at 4 15 P.M. are open to all medical practitioners without fee

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION 1 Wimpole-street, W

MONDAY Jan 4th to SATURDAY Jan 9th —ST JOHN'S HOSPITAL, 5 Lisle-street W C afternoon course in dermatology —WEST END HOSPITAL FOR NERVOUS DISEASES, Gloucester Gate N W Tues, 8 30 P.M., Mr R Lindsay Rea Demonstration on the Fundus Oculi —PRESTON HALL, near Maidstone Kent Sat, demonstration on pulmonary tuberculosis

ST JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE 42 Ranelagh road S W

FRIDAY Jan 8th —4 30 P.M. Prof Leonard Findlay Acute Rheumatic Diseases in Childhood

CENTRAL LONDON THROAT NOSE, AND EAR HOSPITAL Gray's Inn road W C

FRIDAY, Jan 8th —4 P.M. Mr Harold Kisch Inflammation of the Tonsil

LONDON SCHOOL OF DERMATOLOGY, 5 Lisle-street W C

TUESDAY Jan 5th —5 P.M., Dr A C Roxburgh Syphilis

THURSDAY —5 P.M. Dr J M H MacLeod Ringworm Infections

HOSPITAL FOR SICK CHILDREN, Great Ormond street W C

THURSDAY, Jan 7th —2 P.M., Dr R T Brain Useful Remedies in Diseases of the Skin 3 P.M., Dr A. Signy The Use of Vaccines and Sera

Out patient clinics daily at 10 A.M. and ward visits at 2 P.M.

Vacancies

For further information refer to the advertisement columns

Barnsley County Borough —M O H and School M O, £900

Birmingham City Mental Hosp —Jun Asst M O, £350

Bolingbroke Hosp Wandsworth Common, S W —H P, at rate of £120

Bristol Royal Infirmary —Sen Cas H.S and Sen. Obstet. H.S at rate of £150 and £100 respectively Also Res H P's and H.S's to Spec Depts, each at rate of £80

Bury County Borough.—Deputy M O H £650

Cambridge, Addenbrooke's Hosp —Res Anæsthetist and Emergency Officer, at rate of £130

Cardiff Royal Infirmary and Welsh National School of Medicine —Hon Dermatologist and M O for Male V D Centre, at rate of £250

Carshalton Queen Mary's Hosp for Children —Res Med. Supt £1400

Cheshire Joint Sanatorium, Market Drayton —Res M O, £250

Children's Hosp, Hampstead, N W —Res. M O, at rate of £150

Doncaster Royal Infirmary and Dispensary —Res Surg O and Cas H S £250 and £175 respectively Also Res Anæsthetist, at rate of £175

Dundee Royal Infirmary —Hon Asst. Visiting Surgeon for Gynæcological and Obstet Dept

Durham, Richard Murray Hosp Blackhill —H S £200

East Ham Memorial Hosp, Shrewsbury road E —Res M O., at rate of £200

Glasgow Royal Faculty of Physicians and Surgeons —Fellowship Examination

Hastings Royal East Sussex Hosp —Jun H.S, at rate of £150

Hosp for Consumption and Diseases of the Chest, Brompton, S W —H P for Out-patient Dept at rate of £50

Hosp for Tropical Diseases Gordon street W C —Res Med. Supt £400

Hosp of St John and St Elizabeth, 60, Grove End-road, N W —Surg Reg, at rate of £100

Hull Royal Infirmary —Second Cas O, at rate of £150

India Government Medical Research Dept —Gazetted Posts, Rs 625 Also Gazetted Post Rs 250, &c, per annum

Laboratories of Pathology and Public Health —Jun Pathologists £500

Leeds Public Dispensary and Hosp —Research Worker in Arthritis, £500

Leeds University School of Medicine —Readership in Surgery Also Reader in Medicine, each £600

Leicester Royal Infirmary —Hon Dental Surgeon *Also two* Hon Asst Dental Surgeons

Liverpool Royal Children's Hosp —Res M O and Res Surg O for Heswall Branch, each at rate of £120 Also two Res H P's and two Res H S's for City Branch, Myrtle-street, each at rate of £100

Liverpool Stanley Hosp —H P two H S's, and Gynæcological H S, each at rate of £80

London County Council —Asst. M O, Grade I, £350 Also Asst. M.O, Grade II, £250

London Hosp, E —Hon Asst Surgeon to Dept of Neurosurgery

Manchester, Crumpsall Hosp —Res Asst Obstet Officer, at rate of £250

Manchester, Monsall Hosp for Infectious Diseases —Res Asst M O £350

Metropolitan Hosp Kingsland road, E —Cas O and Res Anæsthetist £100

Middlesex County Council —Physician for County Sanatorium, Harefield £650 Also Radiologist, £3 3s per session.

Middlesex Hosp and Medical School W —Surg Reg £300

New Zealand Dunedin Hosp —Radio Therapist £1000

New Zealand Palmerston North Hosp —Pathologist, £900

Norwich Norfolk and Norwich Hosp —Res Cas O Also Res. H.S to Spec. Depts each £120

Pembroke County War Memorial Hosp, Haverfordwest —Res. M.O, £150

Preston and County of Lancaster Royal Infirmary —Obstet M.O £1000

Queen's Hosp for Children Hackney road, E —Clin Asst *to* Med Out patients, 5s each attendance

Royal Cancer Hosp, Fulham-road S W —Res M O, £200

Royal National Orthopædic Hosp, 234 Great Portland-street, W —Two H S's for Country Branch each at rate of £150

Sheffield Royal Infirmary —Clin. Asst to Surg Dept., at rate of £300

Southampton County Borough.—Ear, Nose, and Throat Surgeon, at rate of £300

Stoke-on Trent, Longton Hosp —H.S, £160

Westminster Hospital, Broad Sanctuary S W —Asst. Surgeon

Worcester County and City Mental Hosp Powick —Asst M O, £350

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at St Ives (Cornwall) and Dunbar (East Lothian) Latest date for receipt of applications, 5th January, 1937

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Kettering, Northants (Applications before Jan 12th)

ADDRESSES AND ORIGINAL

THE NOSE AN [illegible]

IN RELATION [illegible]

BY HAROLD BA [illegible]

CONSULTING SURGEON [illegible]
AT ST GEORGE'S [illegible]
DISEASES OF [illegible]

An attack of [illegible]
fever is normally [illegible]
the fauces with a [illegible]
often is only of [illegible]
a clinically mild [illegible]
that precedes the [illegible]
fever After this [illegible]
of a few days to a few [illegible]
rheumatic sympt [illegible]
rences of acute rheum [illegible]
by streptococcal pharyng [illegible]
for doubt, then, th [illegible]
streptococcal infect [illegible]
the effect is produced [illegible]
appear to be a [illegible]
occurs; it seems [illegible]
method of dealing with [illegible]
(1936) of New York [illegible]
from which it appears [illegible]
in the immune response [illegible]
with those of non- [illegible]
patient who develops [illegible]
handles the products [illegible]
coccus in a peculiar way [illegible]
peculiar response which [illegible]
acute rheumatism.

Streptococci attack [illegible]
of the throat the [illegible]
represented by the [illegible]
nasopharyngeal tonsil [illegible]
incidence of acute [illegible]
by tonsillectomy [illegible]
has been followed by [illegible]
that the tonsils should [illegible]
smaller nodules of lymph [illegible]
over the pharynx, and [illegible]
does occur after tonsillectomy [illegible]
does not with certainty [illegible]
rheumatism though [illegible]

CHRONIC [illegible]

Chronic rheumatic [illegible]
an osteo arthritic type [illegible]
non articular forms [illegible]
caused by bacterial [illegible]
ordered metabolism [illegible]
or the climacteric or [illegible]
such as syringomyelia [illegible]
also however be [illegible]
matoid type which [illegible]
but when it comes to [illegible]
organic changes are [illegible]
be expected to result [illegible]
sepsis

Arthritis of the [illegible]
of specific diseases [illegible]
arthritis be caused by [illegible]
an invasion by pyogenic [illegible]
septicaemia, or may [illegible]

A lecture delivered at [illegible]

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ald (1935) have demonstrated a similar subcutaneous injection of gr 1/30 of the choline esterase activity of the nately 15 per cent

ns occur in the choline esterase era of different animal species and iduals of a given species (Stedman Easson 1932) Human serum is igh in the scale. Choline esterase it from the cerebro-spinal fluid of mals although appreciable quantities n substance (Stedman and Stedman all, and Ettinger (1935) determined ity of 200 human sera normal and l although large variations were relationship to health age sex or In a further series of 100 sera ound a fairly smooth distribution ighest readings were approximately as the lowest. Repeated estima intervals, and also over a period howed in individual cases a varia 15 per cent. In a study of the luction of coronary thrombosis dure in dogs Hall Ettinger, and und the normal serum esterase nparatively narrow range for each hile the continuous daily injection holine did not produce any marked erase value from week to week of the animal.

ravis contradictory results have edman (1935) determined the tent of defibrinated blood from a suffering from this disease and ch exhibited a tendency to be ith the normals Hicks (1936), ly examinations of a single case eriod of 5 months found that blood of this patient show any sterase activity which increased of the disease and diminished Prostigmin injection Samples m clinical conditions could be as to the relative severity of

importance of the cholinergic impulses at the preganglionic pathetic system (Feldberg and parasympathetic system (Dale and at the muscle end plates or system (Dale Feldberg and Dale and Feldberg 1936) the oline esterase activity of the patients has been undertaken what correlation if any could the clinical state of the patient ity of the serum Through the Walker it has been suffering from m en extensively already Hospital.

frontal sinuses, but the findings must be interpreted with discretion , much relative dullness of one antrum is especially significant, but may be the result of old cured inflammation , on the other hand, one occasionally finds pus in an antrum which lights up clearly Transillumination gives less assistance in the frontal sinuses, for they are more often asymmetrical If one sinus is dark and the other lights clearly, this may be due to disease or to a small cavity with thick walls But the method is still useful in conjunction with skiagraphy, for, if the dark sinus is thus shown to be of normal size, it is probably infected. A series of skiagrams is helpful particularly if a fluid level is shown , a thickened lining is proof of an unhealthy condition, but may be the result of allergy or of past inflammation, and not of sepsis Neither the making nor the interpretation of these skiagrams is easy , it is most important that standardised positions be chosen and accurately used Exploration gives positive results, but is difficult except in the case of the antrum , normal saline should be injected into the cavity and sucked out with the syringe If pus be found the diagnosis is established , when a clear lotion is returned, if sinusitis be strongly suspected, it should be submitted to bacteriological examination, for it may prove to be definitely infected , but I am not inclined to attach significance to a clear lotion containing a few bacteria

THE TONSILS

Next to the teeth the tonsils are the commonest source of focal sepsis Here, too, indiscriminate removal in rheumatic patients is strongly to be deprecated, though if no relief results less harm has been done than by wholesale extraction of the teeth

The diagnosis of tonsillar sepsis is easy in many cases but is difficult in others, and as usual it is much more difficult to exclude an unhealthy condition than to confirm it Many septic tonsils are quite small and "buried" or deeply placed behind the anterior pillars An important sign is redness of the anterior pillar , in typical cases this shows as a broad red band with a well defined outer margin, and often extends on to the palate in the region overlying the upper pole When the patient is anæmic, as many rheumatic people are, the contrast with the pallor of the rest of the fauces is very noticeable The tonsil should be squeezed, after cocainisation if necessary, with a flat instrument , the back of a nasopharyngeal mirror is very convenient, and may also be used to retract the pillar to aid inspection of a buried tonsil Another method is to aspirate the tonsil with a suction cup designed for the purpose, when pus will be drawn from any septic crypt If fluid pus oozes out of the crypts on pressure, it is sure evidence of sepsis Solid masses of cheesy material or epithelial debris are not uncommon in one or more crypts, but should not by themselves be taken as evidence of a toxic focus There is also a condition called pharyngokeratosis, in which yellowish white projecting nodules cover the tonsils, that is apt to be mistaken for chronic follicular tonsillitis but the nodules are firm and hard and are often to be seen beyond the tonsils, on the base of the tongue and on the pharyngeal wall , these are not a source of toxæmia The examination of a swab rubbed over the surface of the throat is of little value for numerous organisms, including streptococci are normally present in the mouth. It is much more helpful to examine a bead of pus expressed from a tonsillar crypt and carefully picked up on a swab, when a copious growth of *S hæmolyticus* or *S viridans* is significant Glands in the neck are often slightly enlarged and tender in chronic tonsillar sepsis, especially the so called "tonsillar" glands below the angle of the jaw near the carotid bifurcation , this is a valuable sign. I attach considerable importance to the history , the tonsils are suspect when a patient is subject to attacks of sore-throat, even though they appear healthy when examined during a quiescent period Sore throats are of still more significance when they are followed, as often happens, by increase of the rheumatic symptoms

Cases of mild tonsillar sepsis, especially if limited to a few crypts, can be improved and kept in better condition by syringing or wiping out the crypts with hydrogen peroxide or iodine, and the patient may be taught to do this for himself. Periodical aspiration with a suction cup is also useful Deep puncture with a galvanocautery point may be employed into or between the crypts , if applied to a crypt the point must be a fine one and be inserted well down to the bottom, or the crypt will merely be sealed up and absorption from it increased. But, when toxæmia has caused rheumatic symptoms, more thorough treatment is usually necessary The most satisfactory method of treatment is undoubtedly tonsillectomy With modern technique, and especially with particular care in the ligature of all bleeding points, the danger of this operation, even in elderly people, is very slight I have removed a tonsil, which was growing rapidly and which, it was thought, might contain a neoplasm, from a lady of over 80 years of age , healing and convalescence were as rapid and satisfactory as in any younger patient But many patients dread this operation, and many desire a method of treatment which does not involve absence from their work

An old method of treatment with caustics, used by Sir Morell Mackenzie, was revived some 18 years ago by Irwin Moore (1919) It consists in applying once or twice a week on a special applicator equal parts of caustic soda and hydrated lime made into a paste with absolute alcohol This is called "London paste" and produces after five seconds' application a deep red patch streaked with black hæmorrhagic areas and followed next day by a yellow slough. The procedure can be made painless by careful use of cocaine, but is not free from after pain , after some 6–8 applications the tonsil is considerably reduced in size, but I have not persevered to its complete ablation by this method

Of all forms of treatment, apart from tonsillectomy, diathermy coagulation is the most efficient It is not an easy method but, on the contrary, demands considerable technical skill, or harm instead of good may result Graham Brown (1932) of Brisbane has reported 6 cases in which toxæmic symptoms were seriously increased by diathermy of the tonsils, and in one of which subacute multiple articular rheumatism appeared for the first time during treatment The danger lies in producing a dense layer of fibrous tissue which seals or "bottles up" septic lymphoid tissue beneath it To avoid this it is essential to use a finely pointed electrode and to remove the tonsils systematically Pain during the procedure can be almost abolished by careful local anæsthesia I find very helpful the application to the area to be cauterised of a small pledget of cotton moistened with Bonain's solution, composed of equal parts of cocaine hydrochloride, menthol, and phenol, which liquefy to a syrup on mixing together If too much is done at a time considerable after pain is caused and the operator must endeavour to strike a correct balance by doing enough to make progress while causing little pain; with experience this will be found quite feasible The treatment may be applied once a week or once a fortnight to each tonsil; it is often a good plan to treat alternate sides at each weekly sitting At this rate 3–4 months are usually required for complete removal. The greater part of the tonsil can be removed quite quickly but a number of treatments may be required for the destruction of the last deeply placed portions. The tissues are sterilised for some distance beyond the area of necrosis, so that rheumatic symptoms may be improved at an early stage of treatment

Some patients become free from symptoms and remain well over a long period with treatment short of complete removal. Others are symptom free for a time but relapse with subsequent reinfection of the tonsillar remnants and in others again, a satisfactory result is only to be obtained by complete ablation As might be expected the patients who refuse tonsillectomy are apt to be nervous and intolerant of pain and are therefore difficult subjects for this method of treatment Children are unsuitable and so also are those people who, in spite of training and of all gentleness retch and gag intractably when the throat is touched.

REFERENCES

Brown R. G (1933) *Med. J Aust* 2 1
Coburn A. F (1936) *Lancet*, 2 1025
Fisher A. G T (1930) *J State Med* 44 497
Moore, I (1919) *J Laryng.* 34 387

CHOLINE ESTERASE ACTIVITY IN DISEASE

WITH SPECIAL REFERENCE TO MYASTHENIA GRAVIS

BY MURRAY MCGEORGE, M B N Z

(*From the Department of Medicine, British Postgraduate Medical School and Hammersmith Hospital*)

THE intense pharmacological effect of acetylcholine has been well known since its first description by Hunt and Taveau (1906) Dale (1914) analysed this effect and showed that acetylcholine had both a parasympathomimetic or muscarine action and an action resembling that of nicotine on ganglionic cells and muscle-fibres He also emphasised the extraordinary evanescence of this effect and suggested that it was probably due to hydrolysis into choline and acetic acid by an esterase in the blood

Loewi and his co workers (Loewi 1921 1922; Loewi and Navratil 1926) found that the physiological activities of the substance liberated in the *heart* on stimulation of the vagus nerve and of acetylcholine were indistinguishable and showed that both substances were destroyed by aqueous extracts of frog s heart an effect which was inhibited by eserine. Galehr and Plattner (19–7) in a study of the effect of defibrinated mammalian blood upon acetylcholine in vitro found that hydrolysis occurred with great rapidity; while Engelhardt and Loewi (1930) demonstrated the strong inhibitory action of eserine upon this hydrolysis Matthes (1930) showed further that *inhibition of esterase by eserine* which occurred even in such low concentration as one part in 30 millions, was reversible full esterase activity being restored when eserine had been removed by dialysis The action of eserine in protecting acetylcholine liberated from the superior cervical ganglion by stimulation of preganglionic fibres has been described by Feldberg and Gaddum (1934) while Jones and Todd (1935) have demonstrated a similar effect in man the subcutaneous injection of gr 1/30 of eserine *depressing the choline esterase activity of the* serum by approximately 15 per cent

Wide variations occur in the choline esterase activity of the sera of different animal species and also among individuals of a given species (Stedman Stedman and Easson 1932) *Human serum is* comparatively high in the scale Choline esterase is entirely absent from the cerebro spinal fluid of both man and animals although appreciable quantities occur in the brain substance (Stedman and Stedman 1935) Lucas Hall and Ettinger (1935) determined the esterase activity of 200 human sera normal and pathological and although large variations were noted no obvious relationship to health age, sex or diet was apparent In a further series of 100 sera Verebély (1936) found a fairly smooth distribution of activity the highest readings were approximately six times as great as the lowest Repeated estimations at two hourly intervals and also over a period of three months showed in individual cases a variation of less than 15 per cent In a study of the *experimental production of coronary thrombosis* and myocardial failure in dogs Hall Ettinger and Banting (1936) found the normal serum esterase value to have a comparatively narrow range for each individual animal, while the continuous daily injection of 50 mg of acetylcholine did not produce any marked change in the esterase value from week to week throughout the life of the animal

In myasthenia gravis contradictory results have been obtained. Stedman (1935) determined the choline esterase content of defibrinated blood from a number of patients suffering from this disease and obtained values which exhibited a tendency to be low as compared with the normals Hicks (1936) from a series of weekly examinations of a single case extending over a period of 5 months found that *at no time did the blood of this patient show any*thing but excessive esterase activity which increased with the severity of the disease and diminished with treatment by Prostigmin injection. Samples taken under unknown clinical conditions could be accurately estimated as to the relative severity of the disease

In view of the importance of the cholinergic transmission of nerve impulses at the preganglionic synapse of the sympathetic system (Feldberg and Gaddum 1934) in the parasympathetic system (Dale and Feldberg 1934) and at the muscle end plates of the voluntary motor system (Dale Feldberg and Vogt 1936 Brown Dale and Feldberg 1936) the estimation of the choline esterase activity of the sera from a series of patients has been undertaken *in order to determine what correlation if any could* be obtained between the clinical state of the patient and the esterase activity of the serum Through the kindness of Dr Mary Walker it has been possible to include two patients suffering from myasthenia gravis who had already been extensively studied by her in addition to a third case already present in the wards of the Hammersmith Hospital

METHOD

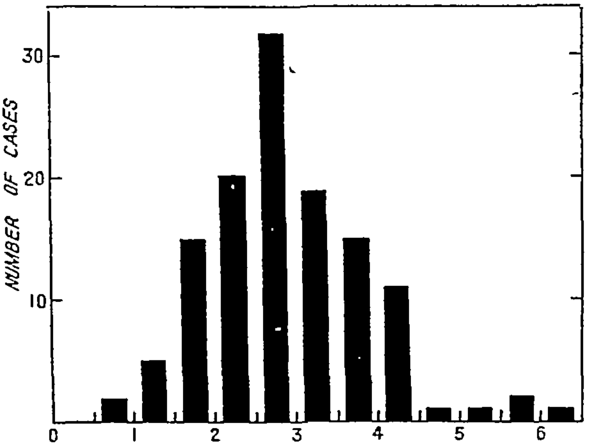
A method of estimation based on that of Stedman Stedman and White (1933) was employed

In a large test tube in a glass thermostat maintained at 30 C. 50 c.cm. of freshly distilled CO₂ free water was placed. To this was added 1 c.cm of cresol red indicator (B.D H.) and 1 5 c.cm of an acetylcholine substrate prepared by dissolving 1 gramme of acetylcholine [illegible] in 10 c cm of water In this solution 1 5 c cm. contained 150 mg of acetylcholine bromide, equivalent to 125 mg of acetylcholine chloride A few drops of 0 1 N NaOH were then added to adjust the reaction to pH 8 Comparison was made with a tube containing 50 c cm of a standard borate buffer and 1 c cm of cresol red indicator, tightly corked and also suspended in the water bath To the substrate 0 5 c cm of serum was then added, the reaction again adjusted to pH 8, and the tube stoppered with a rubber bung which was pierced by an intravenous needle connected by fine rubber tubing to a burette containing 0 01 N NaOH. Alkali was then added, drop by drop through the needle with constant shaking, to neutralise the acetic acid liberated and to maintain the solution at a constant reaction of pH 8 The burette was read at the end of 20 mins , the number of c cm of alkali required being a measure of the acetylcholine esterase activity of the serum Blank determinations without serum required 0 1 c cm of 0 01 N NaOH to maintain a constant reaction over this period, and this figure was consequently deducted from each reading

The figures used in the text to denote esterase activity are the number of c cm of 0 01 N NaOH required as above

RESULTS

Sera from 132 patients were examined, esterase determinations being made in most cases within a few days of admission to hospital These initial readings, arranged in groups according to the esterase activity of the serum, are set out in Table I, the results being summarised in the Figure



The choline esterase activity in 132 patients.
(For units see text)

The series includes a wide range of clinical types—patients healthy apart from some localised disability, patients suffering from malignant disease, toxæmic states, hypertension, congestive heart failure, disseminated sclerosis allergic diseases, thyrotoxicosis and myxœdema, psychoses, and myasthenia gravis A careful study of the order of occurrence of particular diseases, and in addition a detailed investigation of the case histories and clinical types of patients exhibiting either high or low esterase activity, failed to reveal any correlation between this factor and the temperature pulse rate, type or severity of disease, age, sex, or state of nutrition, or with the mental or physical constitution of the patient Thus cases of hypertension, congestive heart failure, or thyrotoxicosis occurred almost equally at all levels in the series while of 3 cases of myxœdema 2 showed comparatively low esterase activity, the third being among the highest recorded

Repeated estimations were made on 44 of these patients, in order to determine what variations if any occurred from time to time, and especially in association with changes in the clinical condition Of these, 13 (30 per cent) varied by less than 12 per cent. on repeated examination over a period of 3–8 weeks, while 31 (70 per cent) showed a variation of under 25 per cent Some typical results are shown in Table II

In 5 cases only did the esterase activity double or halve its value while the patient was under observation, and all these remained within the normal limits The greatest variation occurred in a patient aged 27 with

TABLE I

Initial Esterase Readings in 132 Patients (age in parentheses)

0 5–0 9

Tuberculous pyothorax (33)
Pneumococcal empyema (35)

1·0–1 4

Congestive heart failure (27)
Uræmia (29)
Pulmonary tuberculosis (24)
Arthritis (49)
Pleurisy with effusion (22)

1 5–1 9

Thyrotoxicosis (28)
Thyrotoxicosis (54)
Myxœdema (61)
Myxœdema (42)
Pulmonary tuberculosis (33)
Pulmonary tuberculosis (62)
Broncho pneumonia (38)
Broncho pneumonia (45)
Lobar pneumonia (11)
Acute bronchitis (66)
Bronchial carcinoma (46)
Congestive heart failure (61)
Gastric ulcer (35)
Pituitary tumour (53)
Pernicious anæmia (68)

2·0–2 4

Hodgkin s disease (24)
Pulmonary tuberculosis (48)
Pulmonary tuberculosis (48)
Pulmonary tuberculosis (24)
Pulmonary tuberculosis (19)
Lobar pneumonia (11)
Lobar pneumonia (28)
Bronchitis (80)
Bronchitis (39)
Bronchitis (66)
Bronchiectasis (24)
Bronchial carcinoma (33)
Mitral stenosis (30)
Congestive heart failure (60)
Hypertension (60),
Appendicitis (36)
Psoriasis (40)
Peptic ulcer (58)
Sprained knee (42)
Progressive muscular atrophy (50)
Tabes dorsalis (52)
Latent syphilis (64)
Pernicious anæmia (62)
Venous thrombosis (48)
Rheumatoid arthritis (42)
Mental deficiency (25)
Myasthenia gravis (42)

2 5–2 9

Thyrotoxicosis (49)
Thyrotoxicosis (38)
Thyrotoxicosis (24)
Pulmonary tuberculosis (31)
Bronchitis (68)
Bronchitis (15)
Bronchitis (39)
Bronchiectasis (16)
Empyema (28)
Pleural effusion (32)
Bronchial carcinoma (58)
Mitral stenosis (45)
Mitral stenosis (40)
Peptic ulcer (65)
Peptic ulcer (62)
Rheumatoid arthritis (31)
Rheumatoid arthritis (19)
Osteo arthritis (45)
Acute rheumatism (13)
Coronary atheroma (74)

2 5–2 9 *(continued)*

Asthma (38)
Urticaria (14)
Urticaria (62)
Urticaria (29)
Disseminated sclerosis (45)
Neurasthenia (40)
Senile dementia (64)
Sciatica (45)
Polycythæmia (54)
Ascites (48)
Depression (36)
Myasthenia gravis (36)

3·0–3 4

Thyrotoxicosis (24)
Hypertension (59)
Hypertension (50)
Hypertension (65)
Peptic ulcer (40)
Peptic ulcer (36)
Peptic ulcer (45)
Carcinoma of lung (65)
Acute rheumatism (21)
Rheumatoid arthritis (40)
Osteo arthritis (51)
Osteo arthritis (52)
Asthma (42)
Vincent s angina (20)
Lumbago (38)
Sciatica (33)
Neurasthenia (25)
Hysteria (52)
Mental deficiency (25)

3 5–3 9

Thyrotoxicosis (37)
Simple nodular goitre (43)
Bronchitis (65)
Bronchitis (6)
Bronchitis (47)
Hypertension (53)
Congestive heart failure (65)
Osteo arthritis (40)
Osteo arthritis (52)
Asthma (42)
Acute leukæmia (6)
Venous thrombosis (45)
Erysipelas (66)
Aortic aneurysm (62)
Toxic jaundice (43)

4·0–4 4

Thyrotoxicosis (48)
Thyrotoxicosis (52)
Hypertension (57)
Coronary atheroma (68)
Disseminated sclerosis (26)
Bronchitis (26)
Osteo arthritis (49)
Cerebral thrombosis (66)
Pyelitis (22)
Peptic ulcer (28)
Myasthenia gravis (46)

4 5–4 9

Thyrotoxicosis (36)

5·0–5 4

Myxœdema (63)

5 5–5 9

Rheumatic carditis (13)
Constipation (19)

6·0–6 5

Subacute glomerulonephritis (9)

mitral stenosis and congestive failure values of 1·0 1·8 2·1 3·0 3·4, 2·8 and 2·5 being recorded over a period of 14 weeks during which several exacerbations and remissions occurred. Other toxic or congested patients also showed an unstable level of esterase activity but no constant changes were noted nor could any correlation with clinical state be determined.

TABLE II

Constancy of Esterase Activity on Repeated Estimations

Diagnosis	Age.	Date	Esterase activity
Subacute glomerulonephritis	9	April 1st	6·4
		13th	7·4
		30th	7·0
		May 12th	5·0
		29th	6·5
Focal arthritis	54	March 31st	4
		May 12th	2·6
		22nd	2·5
Pyelitis	22	March 24th	4·0
		May 5th	3·8
		15th	3·9
		22nd	4·0
Tuberculous pleurisy	22	May 5th	1·4
		June 2nd	1·5
		17th	1·4

A special study was made of 8 cases of thyrotoxicosis before and after operation and again remarkably constant results whether high or low were obtained in individual cases The following figures are typical :—

Male, aged 54 (toxic nodular goitre; auricular fibrillation)		Male aged 36 (diffuse toxic goitre)		Female aged 49 (diffuse toxic goitre)	
April 4th	1·5	March 28th	4·8	April 29th	2·7
29th	1·4	April 13th	4·7	May 5th	2·6
May 12th	1·1	30th	4·5	15th	2·5
15th	Op	May 12th	4·3	18th	Op
22nd	1·6	15th	Op	June 2nd	2·1
June 6th	1·3	22nd	3·8	17th	2·1
17th	1·6	June 6th	4·1		

Op =operation.

In 1 case of myxœdema the esterase activity declined steadily under treatment from 5·3 to 2·2 while another case of the same disease exhibited an almost equal increase

CHOLINE ESTERASE CHANGES IN MYASTHENIA GRAVIS

Three cases of myasthenia gravis included in the present series showed serum esterase activity of 1·0 2·6 and 4·4 units—i e well within the normal range as determined above and with little variation on repeated examination from day to day After the administration of a therapeutic dose of 3 mg of prostigmin however there was a sudden drop in esterase activity to ⅓–½ of the resting level with gradual restoration during the succeeding four or five hours towards the end of which period myasthenic symptoms were returning The results of a typical experiment are shown in Table III Thus the patients remained strong only during the period of artificial depression of the esterase level and relapsed as this returned to the previous value.

TABLE III

Effect of Prostigmin on Esterase Activity in Myasthenia Gravis

Time	Remarks.	Esterase activity		
		Case 1	Case 2	Case 3.
	Resting value	2·6	1·0	4·4
0	Prostigmin 3 mg	—	—	—
15 mins.	Patients strong	1·0	0·9	[illegible]
2 hrs	—	1·5	1·4	3·0
5 hrs	Patients drooping	2·1	1·8	3·7
6 hrs.	—	2·3	1·9	4·0

In a similar experiment in which a dose of 2·5 mg of prostigmin was administered to each of three non myasthenic patients a corresponding depression of esterase activity to approximately one-third of the resting level again occurred accompanied in from 10 to 15 minutes by severe visceral and tonic skeletal muscular activity The esterase values in Table IV were obtained —

TABLE IV

Effect of Prostigmin on Esterase Activity in Three Non-Myasthenic Patients

Time	Remarks	Esterase activity		
		Case A.	Case B	Case C
	Resting value	3·5	2·2	2·8
0	Prostigmin 2·5 mg	—	—	—
10 mins	—	1·1	0·9	1·0
10–15 mins	Visceral and motor responses	—	—	—
3 hrs	—	2·3	1·7	2·1
4½ hrs	—	3·1	2·0	2·0

In order to determine the nature of the prostigmin reaction whether due to destruction or to inhibition of the esterase experiments devised by Matthes (1930) on the action of eserine were repeated. Serum taken 10 mins after a therapeutic dose of prostigmin and also a mixture prepared by adding prostigmin in the concentration 10^{-6} to normal serum were dialysed against isotonic saline for 24 hours and the esterase activity of these solutions was then compared with that of undialysed controls and of normal serum The concentration of 10^{-6} was selected as being approximately equal to that present in the serum of the patient on the assumption that a dose of 3 mg of prostigmin was completely absorbed by 3000 c cm of plasma In a typical series of experiments the figures in Table V were obtained

TABLE V

Restoration of Esterase Activity after Removal of Prostigmin by Dialysis

—	Esterase activity		
	Case 1	Case 2	Case 3
1 Normal serum	[illegible]	2·1	3·0
2 Serum after therapeutic dose of prostigmin	1·3	0·8	2·3
3 Normal serum with added prostigmin (1 10⁻⁶)	0·7	0·5	1·2
4 Serum (2) dialysed	2·0	1·8	[illegible]
5 Serum (3) dialysed	2·1	1·6	[illegible]

Thus the depression in esterase activity on the addition of prostigmin in the concentration of 10^{-6} is of the same order as that occurring after a therapeutic dose while its effect on the destructive agent is in the nature of a simple inhibition since on removal of prostigmin by dialysis the activity of the esterase is restored almost to normal

Specimens of urine from 12 patients were tested for esterase activity and in no case was any found Nor did the urine from 2 cases of myasthenia gravis contain any substance inhibitory to esterase activity Two hours after a therapeutic dose of prostigmin, however, urine from these patients was found to possess a strongly depressant effect upon serum esterase, thus suggesting excretion of the drug in the urine

DISCUSSION

These experiments confirm previous observations of the wide variations that occur in the choline esterase activity of different sera, some specimens in the present series showing six times the activity of others In the great majority the values determined remained constant within comparatively narrow limits for each individual patient, while in the few cases in which gradual changes did occur no correlation with other factors could be discovered In myasthenia gravis the serum esterase activity also falls within the normal range, and, as in other diseases, also shows wide variations from case to case with a comparatively constant level for each individual patient The absolute level of serum esterase activity thus appears to bear no relationship with any disease process or with the age, sex, or other physical characteristics of the patient

In the non myasthenic individual there appears to be a state of equilibrium between the rate of liberation of acetylcholine at the motor end plates and the rate of its destruction by the esterase locally present, these factors being so related that the acetylcholine liberated by each nerve impulse can just produce its effect before hydrolysis occurs In myasthenia gravis this normal relationship no longer exists, the failure of the nerve impulse to stimulate the muscle being due either to excessive concentration of esterase at the motor end plates or to deficient acetylcholine production at the same site Since, however, there is no proof that the esterase activity of the plasma, as determined by biochemical estimation, is a measure of its concentration at the motor end plates, no conclusions can be drawn from the present work as to the direction in which the fault lies Brown, Dale, and Feldberg (1936) have stressed the importance of the local concentration of acetyl choline at the motor end plates, and similarly the concentration of the esterase at this site is the important factor rather than its concentration in the plasma Unfortunately no method is at present available by which absolute determinations of esterase activity at this vital point can be made

It has been shown, however, that prostigmin, like eserine, inhibits acetylcholine esterase in vivo or in vitro even in extremely high dilution This inhibition is reversible, since on removal of prostigmin by dialysis, both from the patient's serum after a therapeutic injection and from an artificial mixture of prostigmin and esterase, the activity of the latter is restored In myasthenia gravis there is a close correlation between the degree of depression of the esterase activity of the plasma and the physical condition of the patient, the period of recovery following prostigmin administration coinciding with that of esterase inhibition, while relapse occurs after 4–5 hours as the esterase value is returning to normal At this time also, and at no other, an esterase inhibiting factor—presumably prostigmin in process of excretion—can be detected in the urine During the period of recovery, therefore, the presence of prostigmin in the plasma depresses the esterase activity, both at the motor end plates of the muscles and in the plasma, and so, by re establishing the balance at the former site, restores neuromuscular efficiency This is further supported by the observation that the dose of prostigmin which raises the myasthenic patient to a normal level of activity produces in the non myasthenic subject vigorous tonic contractions of the muscles of the skeletal and visceral systems, due presumably to prolonged stimulation by acetylcholine on artificial depression of the esterase

Russell and Stedman (1936) have recently shown also that the administration of prostigmin to patients suffering from myotonia congenita produces a pronounced increase in muscle tone, and suggest that this condition is due to excessive production or accumulation of acetylcholine at the motor nerve endings It is of interest to note, therefore, that approximately parallel results have been obtained by these workers on the administration of 1 25 mg. of prostigmin to myotonic patients, and by myself on administration of just double this dose to normal subjects

SUMMARY

The esterase activity of the sera of 132 patients, including 3 cases of myasthenia gravis, has been studied Although wide variations occurred no correlation with type of disease or with other factors could be determined

After the administration of prostigmin there is a sudden drop in serum esterase activity This lasts for 4–6 hours, and coincides in myasthenia gravis with the period of temporary recovery of strength. In non-myasthenic subjects a dose of 2 5 mg of prostigmin produces tonic contraction of skeletal and visceral muscles, due presumably to prolonged stimulation by acetylcholine on artificial depression of the esterase

Depression of serum esterase activity by prostigmin is due to inhibition, not destruction, of the esterase, since activity is restored on removal of prostigmin by dialysis

Myasthenia gravis is associated with a failure in equilibrium between the rate of liberation of acetyl choline at the motor end plates and the rate of its destruction by the esterase locally present There is, however, no proof that the esterase activity of the serum is a measure of the concentration of esterase at the motor end plates, a factor which at present cannot be measured

I wish to express my gratitude to Prof F R Fraser, at whose instigation this work was carried out, for his continued interest and encouragement I also wish to thank Sir Henry Dale for valuable criticism and suggestions, and Dr E H. King for advice and assistance with the biochemical estimation of the esterase

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CARCINOMA OF THE CERVICAL ŒSOPHAGUS

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The treatment of cancer of the thoracic part of the œsophagus although occasionally coming within the reach of exceptional skill and good fortune remains essentially an unsolved problem The surgical excision of cancer of the cervical part is on the other hand a problem of which the technical solution has been worked out for many years The hope of cure which this solution offered does not, however appear to have been fulfilled and it seems that surgery to day is doing no better for the cervical than the thoracic cases of œsophageal cancer The object of this article is to examine this anomaly and to put forward certain considerations that may perhaps tend to correct it.

Incidence

Carcinoma of the cervical œsophagus is a common disease. The œsophagus is stated to be the seat of one out of every twenty cancers It is generally recognised that the growths are not uniform in distribution but show a definite grouping whereby the upper end the middle part and the lower end are almost exclusively affected. In Lawrence Abel s monograph (1929) a collection of figures from various authors gives the relative frequency in these three situations the averages being upper end 18 per cent. middle part 47 per cent. and lower end 35 per cent In Abel s own cases the upper end was affected in 20 per cent More recently McGibbon (1930) has published observations on 100 personal cases of which 22 per cent. affected the upper end. In these figures post cricoid carcinoma of the pharynx is not included otherwise the percentage would be much larger Thus about one in every five cases of cancer of the œsophagus affects the upper part Though it is difficult to be precise in such estimates it seems probable that about one in every hundred cases of cancer of all kinds affects the upper part of the œsophagus This relatively high incidence is the more impressive when we remember that the disease is technically operable but very infrequently subjected to operation

Special Features

The infrequency with which cancer of the cervical œsophagus has been treated by radical excision has no doubt been mostly due to the infrequency with which an exact and early diagnosis has been possible At present also the possibility of the less exacting though comparatively unproved treatment of radiotherapy doubtless influences against the use of surgical excision Both methods, however suffer almost equally from the fact that the peculiarities of the disease in this situation have not generally received the close attention on which alone any hope of a reasonably early diagnosis can be based Its evolution differs from that of cancer of the thoracic part in certain particulars which seem to be related to its place of origin The normal features which influence the course of the disease are the large diameter of the cervical œsophagus its close application to the trachea the intimate fixation of the two tubes at the cricoid and the enclosure of the œsophagus in the visceral *compartment* of the cervical fascia together with the trachea the recurrent nerves, and the thyroid gland

DYSPHAGIA

Disturbance of swallowing is generally regarded as the cardinal symptom of all growths of the gullet This view while perfectly correct for cancer in the middle and lower segments and in the post cricoid pharynx needs some qualification in the upper segment. Here, while dysphagia always appears sooner or later it may be wholly absent in the early stages and even when structures outside the œsophagus, such as the recurrent nerve already show involvement. The reasons for the not uncommon delay in the onset of dysphagia seem to be first the large diameter of the cervical œsophagus and secondly the nearness of the pharynx with its strong propulsive action

INVOLVEMENT OF ADJACENT STRUCTURES

The anatomical facts already named, especially the enclosure of the œsophagus in the visceral compartment of the neck, render the involvement of adjacent parts peculiarly characteristic of cancer of this part The recurrent nerves the thyroid gland and the trachea are exposed to implication, and sooner or later they are always affected

The *recurrent laryngeal nerves* are the most important since involvement of one of them is often very early and also because this does not necessarily imply that radical excision is no longer possible In the small series of cases reported below to illustrate the theses put forward the first shows well the occurrence of laryngeal paralysis as an isolated symptom *I owe to a personal communication the following* rough notes of two cases that illustrate the singular position occupied by recurrent nerve involvement among the symptoms of cervical cancer

The first was that of a middle-aged man a choirmaster by occupation. While he supposed himself to be in perfect health his voice suddenly failed him as he was taking a class. He was never able to sing again but his loss of voice was unexplained until some months later he developed an œsophago tracheal fistula

The second was that of a man of about 60 who was engaged in politics and did much public speaking He complained that he felt he could no longer depend on his voice No evidence of laryngeal paralysis was found the condition was supposed to be the effect of a neurosis and the patient was sent on a voyage When he returned one vocal cord was paralysed and an enlarged gland was found in the posterior triangle which showed the structure of squamous carcinoma.

The clinician is not infrequently presented with an unexplained paralysis of a vocal cord in a middle aged man He should remember that in such circumstances he is sometimes being given the chance to cure a case of carcinoma of the œsophagus

Involvement of the *thyroid gland* is less common as an early symptom although I have found one case in which it was apparently the first thing noticed amiss by the patient. Its importance lies rather in the confusion that may arise as to the site of the primary tumour In any case with signs of a malignant tumour of the thyroid the possibility of extension from a carcinoma of the œsophagus should be remembered especially if any surgery is contemplated. As with the recurrent nerves involvement of the thyroid gland does not necessarily preclude radical excision

Involvement of the *trachea* is probably the next commonest complication after recurrent nerve paralysis but whereas the latter is not necessarily a sinister sign the *former* almost invariably results in fistula formation and a rapid death from pulmonary infection Perforation of the trachea may be followed by the sudden development of dysphagia for fluids only, but as has been pointed out by McGibbon (1936), who has described non-perforating lesions of the trachea seen by endoscopy, it is preceded by symptoms of tracheal irritation Case 3 illustrates these points The presence of a fistula makes the case practically hopeless for surgical treatment, but a non perforating lesion of the trachea should not prove an insuperable obstacle, although as yet no satisfactory reconstruction of the trachea has been devised

Glandular metastases —In spite of its tendency to involve structures outside the gullet the disease shows no special tendency to affect lymph glands The possibility of metastases is however always present, and cases occur from time to time in which they dominate the clinical picture When the recurrent nerves are involved it is important to consider the possibility of involvement from mediastinal glands rather than from the primary tumour Metastases in the cervical glands, if not extensive, lend themselves to removal as part of a radical operation

Diagnosis

Without specialised methods of examination the diagnosis is usually impossible in the early stages of the disease Early symptoms are trivial, and the responsibility of deciding that investigation is necessary and insisting that it be carried out will rest with the doctor whom the patient first consults If he is assured that his symptoms are due to nothing serious he may not seek advice again until his condition is hopeless The symptoms that are likely to be thus lightly dismissed are weakness of the voice and slight disturbance of swallowing, and although these may be due to a variety of causes any patient in whom they are persistent or recurrent and unexplained should be suspected of malignant disease of the gullet An essential part of the examination is indirect laryngoscopy, a method with which every clinician should be familiar It requires no great skill to detect weakness or paralysis of the arytenoids or swelling of their mucosa, and a view of the larynx itself is often unnecessary If gross abnormality is found on indirect laryngoscopy no hesitation will be felt in ordering a further examination such as radiography or œsophagoscopy, no matter how slight the symptoms In some of the conditions other than cancer of the œsophagus that may give rise to the symptoms mentioned, laryngoscopy alone may establish the diagnosis When laryngoscopy fails to reveal anything abnormal further investigation is essential if the symptoms persist The patient should next undergo an X ray examination, which must of course include screening In spite of great improvements in technique radiography alone may fail to demonstrate an early growth, as happened in Case 1 described below Such a case should always be examined with the œsophagoscope Chevalier Jackson (1934) states that any persistent abnormal sensation or disturbance of function of the œsophagus calls for œsophagoscopy This is an expert's counsel of perfection, but it is doubtful if any progress towards early diagnosis will be made until this method of examination is much more common. Radiography, in addition to revealing the presence of a tumour, may give some indication of its size In lateral films of the neck the outline of the trachea shows a characteristic forward displacement if the œsophageal tumour is at all bulky (Fig 1) This displacement can sometimes be detected clinically, and may produce a partial obliteration of the suprasternal hollow

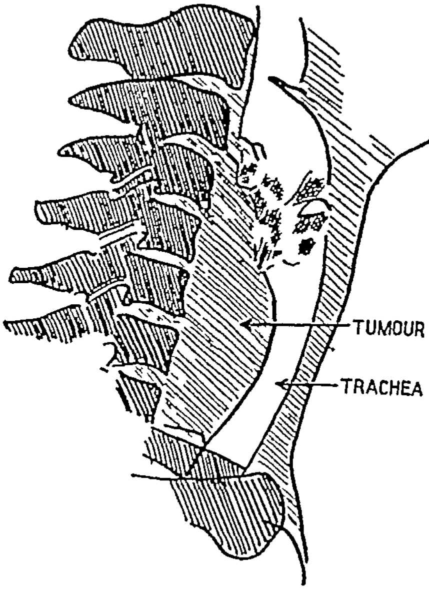
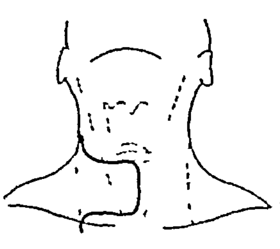


FIG 1 —Tracing of lateral X ray of neck showing displacement of trachea by tumour of œsophagus From a case of post cricoid carcinoma of the pharynx extending down the œsophagus

Surgical Excision

It is not my purpose to discuss the relative merits of different treatments for this disease, but simply

2



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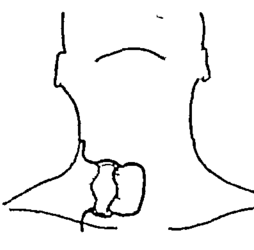

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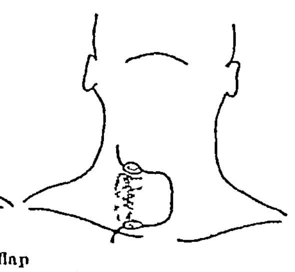

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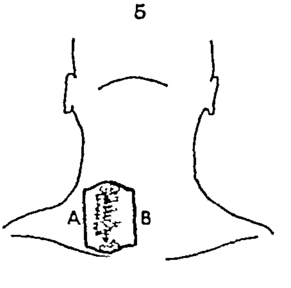


FIG 2 —Incision for cervical œsophagectomy outlining skin flap

FIG 3 —Skin flap passed under mobilised segment of œsophagus containing growth and sutured along original incision This procedure minimises infection of the neck but is only suitable for small growths. In most cases the affected segment must be excised at this stage

FIG 4 —The segment of œsophagus containing the growth has been excised The œsophagus opens above and below on to a trough of skin formed by the flap

FIG 5.—Incision for plastic operation replacing missing segment of œsophagus by a skin tube See also Fig 8

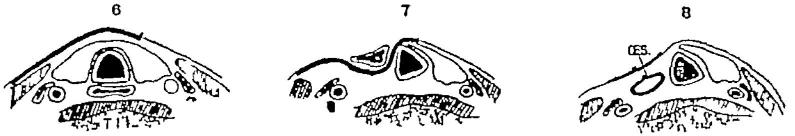


FIG 6.—Diagram of transverse section of neck at level of first thoracic vertebra Skin flap indicated by heavy line

FIG. 7 —The skin flap has been passed under the mobilised segment of œsophagus containing the growth The left lobe of the thyroid gland has been resected

FIG. 8.—The œsophagus has been reconstituted by skin flaps turned in to form a tube (ŒS) The skin has been closed over the tube

to state and show by an example that it is curable by excision That the operation may be difficult and dangerous cannot be denied but these considerations do not deter surgeons from attempting excision of malignant disease in other parts of the body The essential feature of the operation is the excision of the neoplasm with a margin of healthy tissue the amount to be removed cannot be determined until the œsophagus has been exposed and possibly opened It follows that no fully defined plan can be formed beforehand of the steps of the operation but the first incision should outline a generous skin flap which can be used for the plastic procedure that will almost always be necessary Reconstruction of the gullet with skin is a simple procedure but as yet no satisfactory reconstruction of the trachea has been devised If the trachea is removed with the growth the patient may have to be left with a permanent tracheocutaneous fistula in the suprasternal hollow The routine excision of the larynx and upper part of the trachea with the growth as recommended by Carl Eggers (1936) is not necessary and would inflict an unjustifiable mutilation in early cases It may not be possible to decide without exploration whether or not a growth can be excised but involvement of structures outside the œsophagus and metastases in the cervical lymph glands do not necessarily render a case inoperable An essential preliminary to the operation is the elimination of oral sepsis, and all teeth should be extracted.

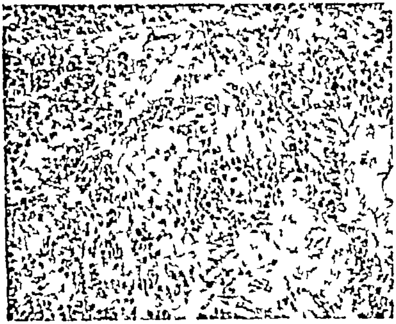


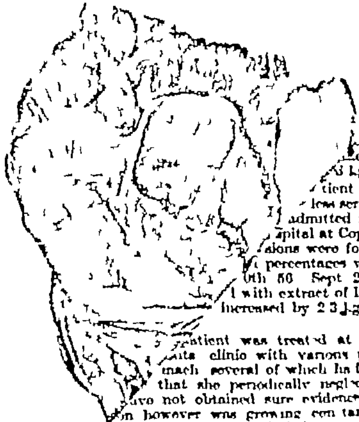
FIG 9 (Case 1) —Carcinoma of cervical œsophagus excised by radical operation (× 85)

Through the kindness of Mr Cecil Joll an opportunity was recently afforded to examine the œsophagus of a man from whom a carcinoma was excised ten years ago In Fig 10 the œsophagus is shown opened posteriorly It is still deviated to the right the side from which the operation was performed. The transition from skin tube to normal œsophagus is barely perceptible although when first opened it was easier to recognise several hairs being found growing from the skin segment This patient was recently admitted to the Royal Cancer Hospital with recurrent chordoma of the sacrum of which he died No evidence was found at post-mortem of any recurrence or metastases of the carcinoma of the œsophagus. The case is reported briefly below and the operative procedure employed is illustrated in the diagrams in Figs 2-8

Case Reports

HOARSENESS THE INITIAL SYMPTOM

CASE 1 —A male aged 61 was admitted complaining of hoarseness for 3 months and dysphagia for 10 days He was found to have enlarged glands in both supraclavicular regions and paralysis of the right vocal cord. Some forward displacement of the trachea was observed Radiography failed to reveal any neoplasm of the œsophagus A gland was removed and showed on section squamous carcinoma. External irradiation of the neck was given without any definite diagnosis having been made Two months later radiography showed obstruction of the œsophagus and a diagnosis of carcinoma was made



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stasis in the organs and pronounced oedema
e spinal lesions seem to have remained stationary the

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Interstitial irradiation was given, but two months later the patient died of hæmorrhage from the right common carotid artery Post mortem an extensive growth was found in the cervical œsophagus, with metastases in the cervical glands and left lung

INVOLVEMENT OF THYROID GLAND

CASE 2—A male aged 68 was admitted complaining of dysphagia for 10 months and a pain in the left side of the neck and shoulder of recent origin His voice had become hoarse during the last month He also complained of a lump in the left side of his neck, and this was apparently the first thing he had noticed wrong He had been admitted to another hospital when the lump appeared but whether its significance was appreciated is not recorded He was found on examination to be wasted, and there was a hard mass above the inner end of the left clavicle involving the left lobe of the thyroid and infiltrating surrounding structures There was paralysis of the left vocal cord and of the left cervical sympathetic This case was advanced when admitted, but there seems little doubt that invasion of the thyroid was an early feature A gastrostomy was performed and gave the patient temporary relief

ŒSOPHAGO TRACHEAL FISTULA

CASE 3—A female aged 52 was admitted complaining of inability to swallow liquids for 3 weeks, although solids passed without difficulty Ten weeks before admission she had an attack of bronchitis lasting 2 weeks, after which she had a persistent cough with occasional hæmoptysis Pulmonary tuberculosis had been suspected and the sputum was examined with negative result There had been rapid loss of weight since the onset of the dysphagia By œsophagoscopy a growth was seen in the upper part of the œsophagus, with a small perforation into the trachea During the endoscopy an emergency tracheotomy became necessary, but the patient only survived a few days

CURE BY RADICAL EXCISION

CASE 4—A male aged 62 was admitted on June 23rd, 1925 complaining of difficulty in swallowing for 6 months and hoarseness for 2 months No tumour was palpable in the neck and neither vocal cord was paralysed, but the right moved more freely than the left Carcinoma of the cervical œsophagus was found by œsophagoscopy and was later confirmed by histological examination (Fig 9) After preliminary gastrostomy and extraction of teeth excision of the growth and reconstruction of the œsophagus were carried out by Mr Wilfred Trotter as follows —

he fe the first operation, through an incision as in
radiogra and 6, the segment of œsophagus containing
slight th th was freed from its connexions and displaced
other than The skin flap was passed underneath the œso
rise to the sy sutured along the line of the original incision
may establish Three weeks later the exposed segment
fails to reveal œsophagus being left opening above and
shallow trough formed by the skin flap
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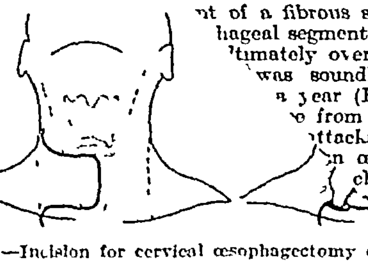

FIG 2—Incision for cervical œsophagectomy outli

FIG 3—Skin flap passed under mobilised segment o procedure minimises infection of the neck but is on be excised at this stage

FIG 4—The segment of œsophagus containing the growth trough of skin formed by the flap

FIG 5—Incision for plastic operation replacing missing segm

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its

The symptoms of the disease are described, emphasis being laid on the tendency to involvement of adjacent parts, especially the recurrent laryngeal nerves

Special methods of examination are necessary to establish an early diagnosis A plea is made for the more frequent use of the œsophagoscope in suspicious cases.

The disease is curable by surgical excision

Four illustrative cases are briefly reported, including an example of surgical cure

I am indebted to members of the staff of University College Hospital for permission to make use of their cases in this paper

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PERNICIOUS ANÆMIA AFTER NITRIC ACID CORROSION OF THE STOMACH

BY G ALSTED, M D Copenhagen

ASSISTANT PHYSICIAN TO THE MEDICAL DEPARTMENT B OF BISPEBJERG HOSPITAL COPENHAGEN

KNOWLEDGE of the pathogenic importance of the stomach, or more correctly, of the gastric mucosa, in various anæmic conditions is of no recent date. As early as 1877 Fenwick pointed out the atrophy of the mucous membrane of the stomach in pernicious anæmia, and this, manifesting itself as achylia, was soon directly connected with the development of pernicious anæmia But it is not only in pernicious anæmia that the function of the gastric mucosa has turned out to be important Faber conceived the notion of simple achylic anæmia, and showed in a large number of cases the close relation between achylia and simple hypochromic anæmia Furthermore, several investigations have been reported showing that hypochromic anæmia often occurs after gastric operations, especially after gastrectomy

While the relation between gastric function and anæmia was thus established rather early, several years passed before a more profound knowledge and understanding of the causative mechanism developed. In pernicious anæmia it was the discovery of the favourable effect of liver therapy that provoked a new interpretation of its pathogenesis, and on the basis of work by Castle and his co workers, and more recently by Meulengracht and his co workers results have been achieved that bring about a certain knowledge of the factor whose deficiency causes the anæmia Its place of origin—the pyloric glands and the Brunner glands in the duodenum—also seems to be fixed This agrees perfectly with records of pernicious anæmia developing after resection of the stomach, Goldhamer having collected 23 cases from these reports These anæmias may in a way be regarded as experimental cases of pernicious anæmia When, as it appears from various control post operative examinations of patients, pernicious anæmia seems only exceptionally to follow gastric resection, it is undoubtedly due to quantitative conditions, since generally it may be assumed that, in spite of operation, sufficient glandular tissue is left to prevent the development of pernicious anæmia

CLINICAL REPORT

Special interest is presented by a case of pernicious anæmia, recently observed in the Medical Department

B of Bispebjerg Hospital, which seems to have developed as a direct consequence of corrosion of the gastric mucosa by nitric acid In 1932 Fleischer Hansen recorded the same case but mainly from a surgical point of view the following communication from the medical angle is made because of the further development of the case since Fleischer Hansen s article No similar case seems to have been recorded

The patient is a woman, now 43 years of age. On Sept 19th, 1035 she was admitted to the Bispebjerg Hospital suffering from pernicious anæmia She had *once before (December 1031) been admitted to the hospital* The history of her disease is a lengthy one comprising several admissions to various hospitals, all on account of her present condition The details of the first part of the *anamnesis are furnished partly by the patient* herself partly by the Horsens City Hospital and partly by Fleischer Hansen s paper

Briefly there is nothing of interest concerning her present disease until June 22nd 1921 when the patient having for some time shown signs of a manic-depressive psychosis in an excess of depression attempted to commit suicide by drinking half a cup of nitric acid The following day she was admitted to Horsens City Hospital where the corrosion was recognised. She quickly improved though she suffered for a time from frequent vomiting During her stay in hospital no evidence was found of any stricture the general condition as mentioned improved quickly the vomiting decreased the hæmoglobin was 88 per cent (Sahli) There was no difficulty in swallowing *either at that time or at any other during the course of* the disease

In the following years the patient again had gastric attacks mainly of vomiting those being so violent that *she at last retained practically no food She consequently* became extremely emaciated and—what is of considerable interest—grew first slightly then more severely and finally exceedingly anæmic *Several Ewald test-meals* showed *complete* gastric achylia As early as November 1021—i.e five months after the corrosion—the hæmoglobin only amounted to 60 per cent After this the hæmoglobin percentage *is known to have been decreasing* steadily until a hæmatological examination made on Oct 4th, 1028 showed these results :

Hæmoglobin	2 per cent	White cells	1880
Red cells	1,000 000	Icteric-index (Meulengracht)	9
Colour-index	1 1		

The blood smear showed distinct anisocytosis and megalocytosis The weight at that time was 37 kg

The general condition of the patient had thus become quite serious and an X ray examination performed with much difficulty showed the gastric lumen to be reduced to an orange sized space in the fundus evacuation into the duodenum taking place *through a canal about 10 cm.* in length and with a width hardly that of a pencil A gastro-enterostomy was performed on Feb 13th 1029 At the operation the radiographic finding was verified the stomach having been converted into a small sausage shaped organ with the calibre of a normal colon The pyloric part showed walls 1 cm thick and the gastric mucosa seemed to be totally deficient The duodenum was surrounded by numerous adhesions, but was otherwise normal A small piece from the fundus was excised for microscopic examination and here the mucosa, the submucosa and part of the muscularis were completely transformed into fibrous tissue few remnants of the glands being found There was no sign of malignancy

After the operation which the patient *supported* amazingly well she improved considerably the signs of pyloric obstruction subsiding A disposition to vomit continued the patient only being able to eat small meals ; furthermore there was frequent diarrhœa interpreted as gastrogenic in type She remained however extremely anæmic, and an examination of the blood made in July 10 9 *five months after the operation showed this result :*

Hb	20 per cent.	White cell	2160
Red cell	850 000	Icteric index	11
Colour-index	1 19		

The blood smear showed megalocytosis with an average diameter of the red cells of 9 3 μ, with a few megaloblasts. She was treated with blood transfusions and extracts of liver and stomach the treatment however suffered much from her bad mental condition which often led to a *refusal to eat*

A month later August 1020 the hæmoglobin had decreased to 17 per cent and the red cells to 800 000 but her psychosis now subsided and, treatment thus *becoming effective* the hæmoglobin percentage quickly increased During a later stay in the Horsens City Hospital in May 1931 her weight was 55 kg and an examination of the blood gave the following results :

Hb	83 per cent.	White cells	5200
Red cells	5 400,000	Icteric index	5
Colour-index	0 83		

At that time no reticulocytes were counted

At the end of 1930 the patient had begun to suffer from a disturbed gait to which were added acroparæsthesiæ, numbness of fingers and toes and soreness of the tongue During the last mentioned admission, a slight spastic paralysis of the lower extremities had been found with a positive Babinski s sign, and increased deep reflexes together with slight clonus. It remains to be noted that the patient as early as 1025 suffered from a tendency to blisters " on the tongue

In spite of the improvement of her anæmia her condition remained poor the patient being much troubled by spinal symptoms and not being able to attend to her work at home She also suffered from extreme fatigue and she was *admitted in December 1931 into the* Bispebjerg Hospital to be observed before being awarded invalid benefit She was now found to be in an alternating psychosis condition highly stamped by her mental disorder *The weight was 52 kg and Wassermann reaction* was negative No signs of corrosion were found The tongue was smooth and glistening with atrophy of the papillæ On examination of the lower extremities the *power was found unimpaired the deep reflexes were* spastic and there was slight ankle-clonus Babinski's reflex was positive on the right side Ataxia was found in the knee-heel test. Sensibility was normal the gait was unsteady but not characteristically spastic A hæmatological examination showed :—

Hb	50 per cent	White cells	3300
Red cells	4,040,000	Icteric index	5
Colour-index	0 75		

A differential count gave *normal* figures In the urine no pathological elements were found An X ray examination of the œsophagus and the stomach showed no pathological changes in the œsophagus The stomach had the appearance and the width of intestine the pyloric part and the duodenal bulb could not be recognised (Fig 1)

During her stay in the department the patient was allowed up ; she felt constantly hungry but did not suffer from dyspepsia apart from slight oppression after meals When the patient was discharged her weight was 53 kg

As mentioned the mental condition of the patient was very variable and in August 1032 she made a less serious attempt at suicide and was consequently admitted into the psychiatric department of the City Hospital at Copenhagen. During the stay her nervous lesions were found *to be unchanged and the hæmoglobin percentages were* as follows August 17th 55 ; Sept 10th 50 Sept 21st 60 ; Oct 13th, 68 She was treated with extract of liver and Ventriculin and her weight increased by 2 3 kg in spite of frequent diarrhœa

After her discharge the patient was treated at the hospital s medical out patients clinic with various preparations of liver and stomach, several of which had no effect It seems likely that she periodically neglected treatment but we have not obtained sure evidence of this Her condition however was growing constantly worse and *immediately before her admission to the* Bispebjerg on Sept 19th, 1935 she had been lying in bed in her home for at least three months without any treatment at all.

On *admission therefore* the patient was extremely exhausted slightly confused subicteric. Extreme anæmia was present together with symptoms of heart failure venous stasis in the organs and pronounced œdema The spinal lesions seem to have remained stationary the condition being found practically unchanged from the previous admission four years before Treatment was begun at once, she was given Pylorin* together with extract of liver but in spite of this her condition grew worse The temperature was rising, indicating an infection of the urinary tract with colon bacilli, and it was found necessary to perform a blood transfusion After this the patient improved the temperature fell, the vomiting ceased, and she took her medicine without any difficulty The œdema and the stasis disappeared, her mental condition improved, and she has since presented nothing abnormal in her psychotic condition The blood examinations appear in the accompanying Table In Fig 2 the various counts are plotted graphically

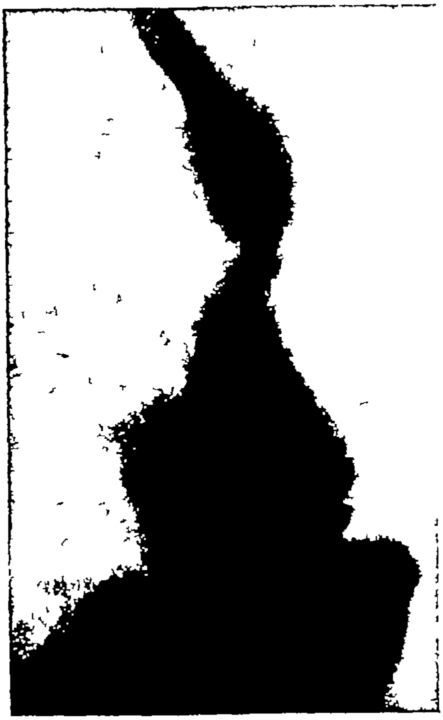

FIG 1.—Radiogram of the œsophagus and the stomach The pyloric part and the duodenal bulb are unrecognisable

The blood smear from Sept 25th showed a lymphocytosis of 72 per cent , some megalocytes but no other abnormalities The remaining examinations such as Wassermann reaction and electrocardiography gave normal results An X ray examination of the stomach showed the condition unchanged from the previous examination four years before , a rapid passage through the gastro-enterostomy was seen but there was no evidence of intestinal stricture

The experiences from the previous admission being kept in mind a Ewald test meal was not attempted but a fractional gastric analysis was performed no fasting secretion was obtained, but after a histamine injection 2–13 c cm of gastric content was aspirated It was of a slightly yellow colour not reacting to Congo red paper , the acidity, titrated with phenol phthalein as an indicator, amounted to from 6 to 10 The slight yellow colour might suggest regurgitation through the anastomosis, but it is doubtful if this could be avoided

As apparent from the Table and the graph a rapid rise in hæmoglobin and especially in the red cells began in direct connexion with the blood transfusion At the same time the general condition improved as already mentioned, so that the patient in the course of a short time was able to move out of bed The high reticulocyte counts at the beginning are peculiar , it seems doubtful if they are caused by the treatment with preparations of stomach and liver, prescribed only two days before. It might be suggested that the patient, when admitted, was in a state of spontaneous remission

In spite of the improvement of the blood counts and of the general condition of the patient, her weight during a long time showed a constant and regular decrease for a while being far below the weight at the previous admission Compared to the ravenous appetite of the patient, this constant loss of weight seemed most remarkable Periodically she ate up to 40 sandwiches in a single meal without any notable dyspeptic trouble, an astonishing fact considering the small capacity of her stomach. Part of the loss of weight is undoubtedly due to the disappearance of the œdema, but all of it can hardly be explained in this way At the same time her stools being at first watery, became solid and very voluminous, the weight amounting to 400 grammes Since it was not fatty diarrhœa, presumably the quantity of fæces was due to an extremely bad absorption of food, caused by the hasty passage through the anastomosis into the jejunum The greater part of the food thus passed unabsorbed through the digestive tract, this explains the disproportion between the abundant intake of food and the weight of the patient This, however, turned out to be only a transitory phenomenon , shortly afterwards her weight began increasing and at the time of discharge, on Nov 24th, her weight was 51 3 kg —i e , she had put on 9 kg in weight At the same time the hæmoglobin had risen to 74 per cent , and the patient was discharged from the hospital, being told to continue the combined treatment with pylorin and extract of liver A control examination two weeks later showed that her weight had increased a further 5 kg , the hæmoglobin percentage had remained stationary, the red cells having, however, risen to normal She gave then the impression of an absolutely normal woman, her appetite still being extensive, even if not as ravenous as before , she suffered from no dyspepsia, and her stools were normal in all respects Of her former complaints, only the irreparable spinal symptoms remained

DISCUSSION

No doubt is likely to be raised about the diagnosis that this patient was suffering from pernicious anæmia, and it seems to be most probable that her disease developed as a consequence of the corrosion of her gastric mucosa, this being, as observed at the operation, completely destroyed, especially in the pyloric portion Three months after the injury her hæmoglobin had already fallen to 60 per cent, and the fact that about seven years had to pass before the pernicious anæmia had completely developed coincides with general experience Thus Goldhamer, reviewing the reports on pernicious anæmia resulting from resection of the stomach, found the period

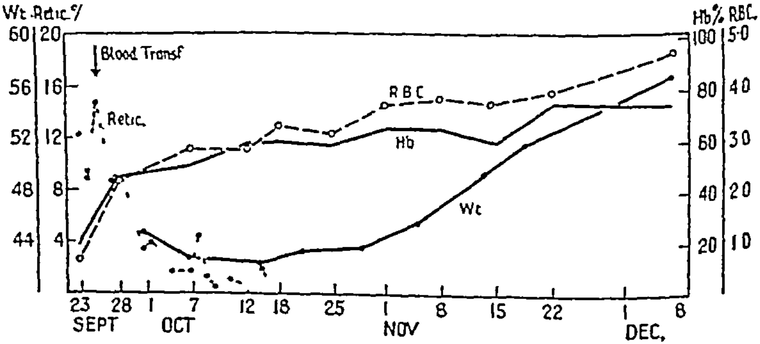

FIG 2.—Showing the patient s progress

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[*] A preparation made by Medicinal Co Ltd Copenhagen according to the work of Meulengracht exclusively from the pyloric part of the stomach of the pig

of development from 5 months to 15 years Thus the destruction of the pyloric glands, caused by the corrosion in this patient has produced a genuine pernicious anæmia with all of its classical symptoms There is no reason to suppose that there were any other concurrent causes no evidence of intestinal stricture was found as already mentioned

The patient's remaining anæmia after the gastro enterostomy was probably due to the difficulties in achieving a rational therapy because of her mental condition but even later when the giving of treatment was successful, her anæmia seemed to respond somewhat unusually It was evidently being kept compensated only with some difficulty; this is apparent inter alia from the swinging hæmoglobin percentages and from the development of spinal symptoms. I do not think that these circumstances can be completely explained as being due to incompleteness of the treatment since this was very energetic while it was being carried on; neither can it be explained as being caused by the negligence of the patient since it was not of any importance until late in the disease

Date.	Retic. per cent.	Hb per cent.	R.B.C. (mill.)	C.I.	W.B.C.	Ict. index.	Wt. (kg)
Sept. 23rd	12·[illegible]	18	0·6	1 41	2100	12–13	
24th	8 5						
25th†	14·6						
26th	11·0						
27th	8·0						
28th	0·2	46	[illegible] 2	1·03	2000	5	
30th	4 8						44 7
Oct. 1st	3 4						
2nd	3 8						
3rd	3·2						
4th	2·0						
5th	1·6						
7th	1·6	40	2 8	0 88	3800	5	42·6
8th	1 1						
9th	1·3						
10th	0 4						
11th	0·6						
12th	1·0	57	2 8	1·0*	4700	5	
14th	0·6						42 1
15th	1 2						
16th	1 8						
17th	0·4						
18th	0 3	58	3	0·90	3700	5	
21st							43 6
25th		57	3 1	0·93	3900	5	
28th							43 7
Nov 1st		64	3·6	0 88	4500	5	
4th							45 7
8th		64	3 8	0 84	4900	5	
13th							40·2
15th		69	3 7	0 80	2000	5	
18th							51 5
22nd		74	3·9	0·91	4100	5	
Dec. 7th		74	4 7	0 78			50 7

Treated with pylorin and liver extract from Sept. *1st.
† Blood transfusion 500 c.cm

In my opinion it seems to be likely that her condition, apart from her pernicious anæmia was influenced by the general agastria this being further accentuated by the gastro-enterostomy Her condition also contained elements of a hypochromic anæmia this expressing itself in the difficulty of making the hæmoglobin percentage rise to normal in spite of the combined treatment with pylorin and extract of liver contrasting with the red cell count which as mentioned finally showed normal values As shown by Cosin and Hurst Meulengracht (1934a) Hartfall and Larsen gastro-enterostomy alone may cause anæmia this most frequently being hypochromic and very similar to the simple achylic or achlorhydric anæmia In most of the observed cases achylia and a quick emptying of the stomach through the anastomosis was present In some few cases Hartfall (1934) Larsen (1934) a hyperchromic anæmia developed responding to liver treatment and being very similar to pernicious anæmia.

In this case as mentioned no doubt several factors contributed to create the present not quite typical picture Being treated with preparations of stomach and liver her anæmia has lost the pernicious character she is now left with a gastro-enterostomy anæmia better called an agastric anæmia together with irreparable symptoms as the atrophy of the papillæ of the tongue and the spinal lesions The hasty passage through her anastomosis and the bad absorption of the food combined with it also expressing itself in loss of weight even if only transitory may be supposed to cause the part of her anæmia that turned out to be unaffected by liver and stomach treatment The prognosis of her disease will no doubt be directly dependent on the success of the treatment in combating the conditions described; this needs the patient's active coöperation It looks as if this has succeeded, at least at present and that is why it is permissible to make a fairly favourable prognosis.

The unquestionable connexion between the destruction of the pyloric glands and the development of anæmia makes the case a good example of the importance of the gastric mucosa in the pathogenesis of pernicious anæmia strongly supporting at the same time the theories conceived during latter years.

SUMMARY

A case of typical pernicious anæmia is described developing in a woman, aged 43 in the course of seven years after corrosion of the stomach by nitric acid. This completely destroyed the gastric mucosa especially in the pyloric part the stomach being transformed into a small sausage-shaped organ with intestinal dimensions and with a considerable pyloric stenosis Gastro enterostomy was performed 7½ years after the corrosion connecting the orange sized gastric cavity with the jejunum Treated with preparations of liver and stomach the general condition improved, though it was difficult to keep the anæmia compensated spinal symptoms thus developing

During a recent admission to hospital, however the condition was found to be serious the patient having been untreated for at least three months previously After a blood transfusion and specific treatment the patient improved fairly well, though remaining somewhat anæmic It is supposed that this anæmia now hypochromic is due to the gastro enterostomy and general agastria since it is demonstrated that there is a very quick passage of food through the anastomosis causing extremely bad absorption

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PULMONARY FIBROSIS IN CHILDREN

A REPORT ON TWENTY THREE CASES

By M O Raven, D M Oxon, M R C P Lond

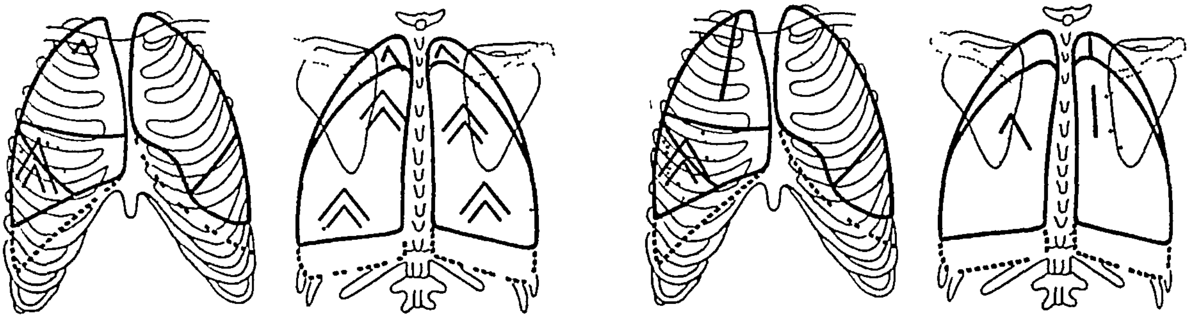
PHYSICIAN TO THE RAMSGATE GENERAL HOSPITAL MEDICAL OFFICER OF THE ST MARY S AND OF THE CLEVEDON CONVALESCENT HOMES BROADSTAIRS

Having had 45 children with pulmonary fibrosis under my care at Broadstairs between June, 1928, and August, 1934, it seemed worth while inquiring into the subsequent histories of some of them Excluding a number of mild and more recent cases, 29 children were chosen for circularisation and as a result 23 were traced by the efforts of the Invalid Children's Aid Association Of these 16 were re examined at a special clinic, while reports (non medical) were received from another 7 The remaining 6 cases could not be traced. Fortunately, nearly all the cases with most long standing illness and with the severest physical signs were included among those that turned up at the clinic, and the report is largely based on these

RESULTS

No death was reported on the contrary, with one exception, good health and improvement in the local condition were found, though most of the children had been away from time to time to special schools and convalescent homes

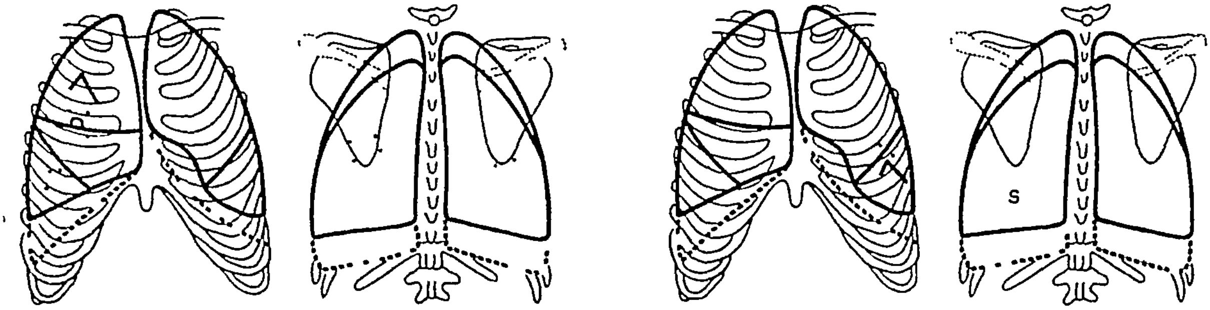
The exception was a girl noted as "very undersized," when she was at Clevedon Home, Broadstairs, in 1931, she then, at the age of 7, weighed 2 st 8½ lb Re examined in December, 1935, at the age of 12, she only weighed 3 st 9 lb and presented very extensive bronchiectatic signs with dislocation of the heart to the extent of 2½ in., she had also severe cough, 4 oz sputum daily, considerable dyspnœa, and clubbing of the fingers, and she had had recent hæmoptysis This was in contrast with her condition in 1931 when she was discharged to London free from symptoms



Case 1 —Girl aged 6½ in January, 1929

1929
Bronchiectasis for 2 years previously no symptoms

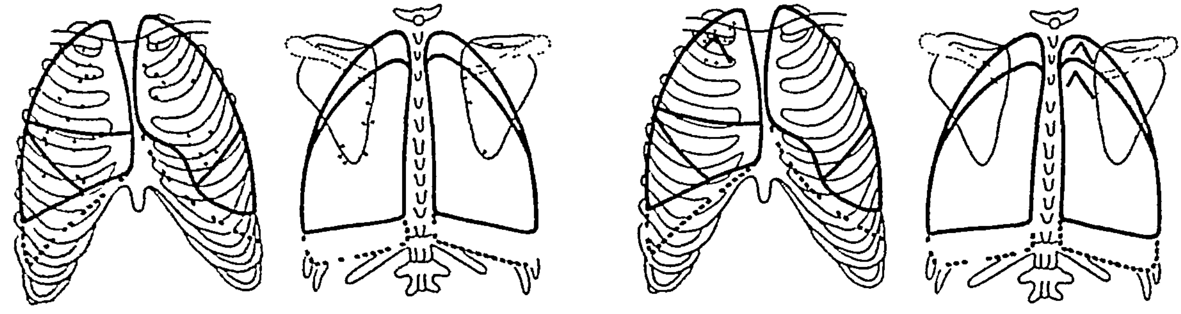
1935
Slight dyspnœa and cough heart pulled over to right progressive fibrosis



Case 2 —Boy aged 6 in January 1929

1929
Chronic bronchitis 2 or 3 years no symptoms

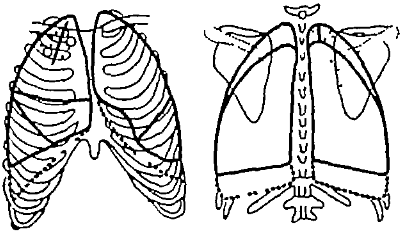
1935
Much improved slight cyanosis and clubbing of fingers mad on football"



Case 3 —Girl aged 7 in October 1928 Fibrosis left lung following on previous pneumonia

1928
Admission to home no symptoms beyond slight clubbing of fingers

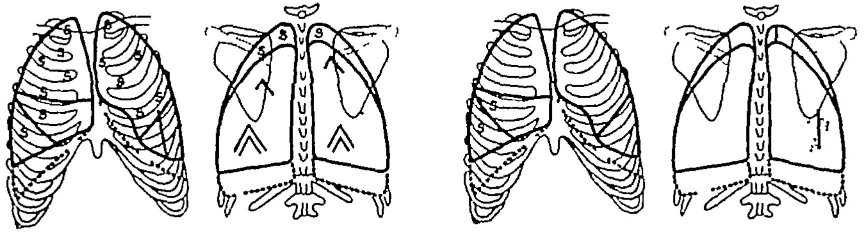
1929
Discharge to London No symptoms



CASE 3 (*continued*)
1935
Played games at ordinary school till last summer no more cough than any one else has There had been a recent bright hæmoptysis Dr M Davidson tells me there is no sign of tuberculous infiltration Sputum showed no tubercle bacilli after the hæmorrhage

With this exception the reports and findings as to general health were favourable One boy, who had extensive signs in both lungs in 1929 was said to be mad on playing football and had greatly improved physical signs A girl discharged in 1929 after 10 months at the sea was reported to be well and working in an office. Other reports in cases showing extensive physical signs in 1930 or earlier were: No sputum and keeping well Done well; no sputum; never ill since leaving the home : Trouble with chest sputum only in winter; getting on well.

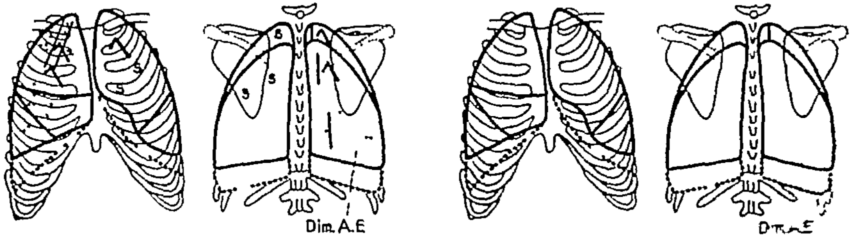
The above reports, taken by themselves are not perhaps, very convincing but it is fair to say that with the exception of the one severe case quoted of the 16 children that came for examination none appeared invalid and most were in robust health—as indeed one usually finds them to be at convalescent homes even when the physical signs are very



CASE 4 —Girl aged 8 in April, 1929

1929
Cough rickettу-shaped pigeon-chest; fibrosis coughing a lot clubbing of fingers

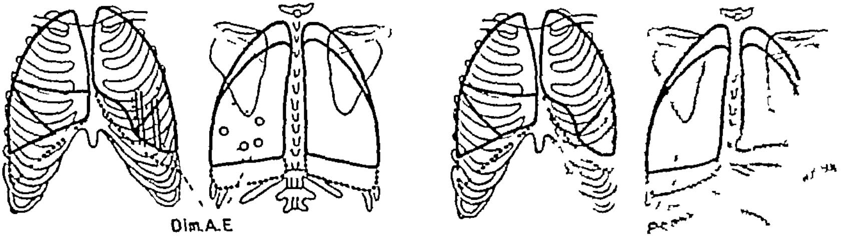
1935
Does office work illness after coming home nothing since; has done well



CASE 5 —Girl aged 7 in December 1929

1929
Pulmonary fibrosis; some cough.

1935
"Never an illness since."



CASE 6.—Girl aged 7 in June 1930

1930
"Fibrosis of lungs", cough; clubbing of fingers.
Dim.A.E. = Diminished air-entry

1935
Cough has [illegible] gradually [illegible]

extensive The signs are hard to summarise, variations being very pronounced, but it may be said that râles show diminution in extent and in number, that, with progressive fibrosis, areas of cavernous breath sounds do not necessarily enlarge, which perhaps accounts for the fact that only in very few cases did the parents report the presence of sputum

CASE REPORTS

It will probably be simplest if I report in detail the progress of six advanced cases (see Charts)

SUMMARY

Of 23 cases of pulmonary fibrosis in childhood, 22 were reported or found on examination to be in good health generally after an interval of from 3 to 6 years None had died. Improvement made at a convalescent home had been maintained and in many cases increased Deterioration in the physical signs was found to be the exception

I should like to thank the Invalid Children's Aid Association for their great assistance in organising the clinic at which the patients were re examined

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OXYGEN ADMINISTRATION

FURTHER OBSERVATIONS

BY J ARGYLL CAMPBELL, M D , D Sc Edin

(*From the National Institute for Medical Research*)

AT present the common methods of oxygen administration are the closed tent (Hill 1921, Campbell 1934)—a form less frequently used is the open tent or box (Campbell 1934 [1])—and the nasal catheter (Campbell 1934, Marriott and Robson 1936) The disadvantages of the closed tent are the isolation of the patient, the constant skilled attention required for efficient running, and the expense, which usually amounts to 30*s* –40*s* a day The open tent has similar disadvantages, except that the patient is not quite so isolated and gains freer exchanges of air The disadvantages of the nasal catheter are the irritation of the nasal mucous membrane with high rates of oxygen flow for prolonged periods, and the need for local anæsthetics , also the catheter is very wasteful of oxygen, which makes its running expenses as high as those for the tent Because of these disadvantages a box mask (Campbell 1936a) and a small face tent have been introduced, the running expenses of which are about 15*s* a day if 100 c ft cylinders of oxygen are used The face tent is similar in shape and principle to the box mask, but whereas the latter is made of aluminium or cardboard, the former is constructed from wire and closely woven linen For similar efficiency the expense of the box mask or face tent is half that of either the large tent or catheter Also with the mask no analysis of gas is required and there is no obstruction to breathing since there are no valves to be opened and closed Valves constitute the disadvantage of the usual rubber face masks Further the box mask requires a minimum of attention and little skilled knowledge

The large tent makes the whole bed more or less gas tight but the upper part of the body and the head are free inside the tent , isolation is however almost complete With the catheter or box mask the head is not completely enclosed and the patient can communicate freely with others, but for this advantage the patient must put up with some apparatus on the face

THE BOX MASK

The box mask (see Figure) was described in previous communications (Campbell 1936a and 1936b) to which the reader is referred for details When made of aluminium it weighs about 100 g , but it may be improvised from a cardboard box and a catheter in about ten minutes, and if made of thin material is much lighter The aluminium mask is, of course, the more durable but not more efficient. When in use the mask is connected with a Bobbin flow meter (1 in Fig) through which the oxygen passes from a standard automatic regulator fixed to the oxygen supply cylinder It is not necessary to moisten the oxygen, especially as moisture from the expired air condenses on the inside of the mask

Table showing Experiments with Box Mask under Varying Conditions

Date	Condition of subject	Volume breathed, litres per min	O_2 flow, litres per min	Alveolar pressures * per cent atmosphere		Mask used and its conditions
				CO_2	O_2	
1936 May 28th	Sitting resting	7	6	6 1 6 3	50 0 50·0	Aluminium mask without curtain.
Nov 10th	"	7	6	5 6 5 2	46 3 50 6	Linen face-tent moistened without curtain
July 8th	"	7	6	5 9 6 0	66 8 70 3	Aluminium mask with curtain
July 9th	" "	7 7	8 7	5 7 5 6	77·0 70 9	" "
Oct 28th	Exercise	10	6	6 5 6 7	38 8 36 7	Aluminium mask without curtain.
Oct. 27th	"	10	6	6 9 6 8	45 8 42 6	Aluminium mask with curtain

* The alveolar gas samples were taken by the Haldane method immediately after removal of the mask from the face about 5 c.cm were analysed in the large Haldane apparatus

It was shown previously (Campbell 1936a) that it is possible to maintain an oxygen pressure of about 50 per cent of an atmosphere in the lung alveolar air, with an oxygen flow of 6 litres per min (see Table, May 28th) Further observations have now been made, with a similar oxygen flow, to obtain alveolar oxygen pressures higher than 50 per cent This figure is sufficient for all ordinary purposes—e g , in pneumonia—but in cases of carbon monoxide poisoning it is desirable to use almost pure oxygen for short periods to hasten the separation of the carbon monoxide from the hæmoglobin For this purpose a curtain of lint (3 in Fig) is attached, by means of an elastic band, to the lower open end of the mask so that the curtain hangs about 4½ in below the lower end of the mask The curtain must at the same time close the small openings at the lower ends of the sides and front of the mask The curtain is freely open below and hangs collapsed on the chest but, with oxygen flows of 6 litres per minute or more, there is enough ventilation through the collapsed open end to prevent accumulation of carbon dioxide or monoxide

With this arrangement and a flow of 6 l of oxygen per min the alveolar oxygen pressure becomes about 65–70 per cent (see Table, July 8th) while with a flow of 8 l per min. the alveolar oxygen pressure becomes about 80 per cent

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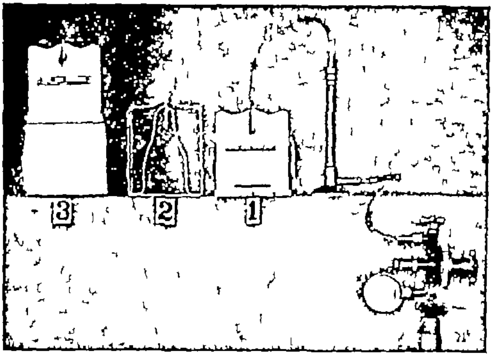
[1] See also *Lancet* 1936 2 697



1.—The front of the box mask with the inlet tube above attached to the Bobbin flow meter which in turn is connected with the automatic regulator on the O cylinder

2.—The wire frame for the linen face-tent the bent inlet tube is seen above The bottle-shaped opening accommodates the nose and mouth

3.—The box mask from the front with the curtain of lint below

(Photograph by L W Collison.)

(July 9th) These figures were obtained with the subject sitting quietly with head slightly bent forward and with a respiratory volume of 7–8 l per min In order to test the mask with a larger respiratory volume e.g 10 l a min —as is observed with some patients with respiratory distress—the subject performed mild exercise to raise his respiratory volume to about 10 l per min He stepped up on to an ordinary chair (18 in high) and stayed there for 30 secs and then stepped down again remaining on the floor for another 30 secs He repeated this routine once a minute for 6–10 mins breathing through the mask all the time With oxygen flow of 6 l per min. into the mask the alveolar oxygen pressure was 37 per cent (Oct 28th) but with the curtain of lint at the bottom the pressure was 45 per cent (Oct 27th) As the movement of exercise changes the position of the mask and curtain these figures must be considered minimal

With a patient in bed the lower open end of the mask is just above and faces the chest while the curtain of lint lies on the chest the curtain retards the exit of oxygen from the mask and at the same time retards the entry of air into the mask so that the oxygen concentration in the mask is raised Without the curtain the lower end of the back of the mask is almost touching the chest with the patient in bed and the head slightly bent forward on the pillow The chest in this case also acts as a slight check on the flow of oxygen out from the mask and the entrance of air into it All the observations with the mask in the resting subject have been made with the head slightly bent forwards as in the patient If the head is held straight up there is freer exchange between the oxygen in the box and the air outside and therefore the alveolar oxygen pressure is slightly lower with the head in this position.

A SMALL COLLAPSIBLE FACE TENT

This face-tent is really a modified box mask It has the same shape and is run on exactly the same principle but it is very much lighter weighing less than 50 g and is thus of value with aged or frail patients It is made of a framework of wire (2 in Fig) covered with closely woven linen The framework is collapsible an advantage where space saving is required in transport Another advantage of this apparatus is that the linen may be moistened with water when the patient is hot or feverish. The evaporation of moisture from the linen will cool the face as well as the gas to be inspired The results for alveolar oxygen pressure with this small face tent, either moistened or dry are similar to those with the box mask Thus a flow of 6 l. of oxygen per min. raises the alveolar oxygen pressure to about 45–50 per cent (see Table Nov 10th)

Leonard Hill (1915) used a similar face covering but the principle is not the same The efficiency of the box mask and face tent depend on the end of the inlet tube (or catheter) for oxygen being bent upwards so that the incoming oxygen strikes the middle of the top of the apparatus

SUMMARY

It is shown how with the aid of a short curtain of lint alveolar oxygen pressures of 70–80 per cent may be obtained with the box mask and a moderate flow of oxygen Such pressures are required in carbon monoxide poisoning or for short periods on other occasions The box mask may be improvised from a light cardboard box and a catheter in ten minutes

A small collapsible face-tent weighing less than 50 g is described for use with frail patients It works on the same principle as the box mask and with a flow of 6 l of oxygen per min raises the alveolar oxygen pressure to about 45–50 per cent

All the apparatus may be obtained from Messrs Siebe Gorman and Co Ltd 187 Westminster Bridge-road S E 1

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INTERNAL PNEUMOLYSIS*

A FURTHER ONE HUNDRED CONSECUTIVE OPERATIONS

By F G Chandler M D *Camb* F R C P *Lond*

PHYSICIAN WITH CHARGE OF OUT-PATIENTS ST BARTHOLOMEW'S HOSPITAL SENIOR PHYSICIAN CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS VICTORIA PARK E.

In The Lancet of Oct. 10th 1936 I published the results of 110 consecutive operations The present series follows straight on

The 100 operations were performed during 1934–36 on 68 tuberculous patients As in the first series the cases were unselected in several there was bilateral disease and in some a bilateral pneumothorax Every patient where possible has been followed up at three monthly intervals I would point out however that I am unable to control the after treatment of many of them Not that I have any adverse criticism of this but in some I think I should have left certain effusions alone that were aspirated in others I might have made an oleothorax while in others again I might have made a bilateral pneumothorax

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* It has been pointed out to me by Dr F R G Heaf and others that the term "pneumolysis" is incorrect and that the word should be "pneumonolysis." At the same time the abbreviation has been established by usage as for example in pneumococcus and pneumokoniosis

There may appear to be a discrepancy in the figures This is because some patients were operated on two or three times, in one case an operation was performed first on the right and then on the left side of the chest

Of the 68 patients the youngest was sixteen and the oldest forty nine The operations and their results are summarised in the accompanying Table

ADHESIONS

(varying from simple bands to complicated systems of adhesions sometimes more than 4 in wide and 2 in or more thick)

	Cases
Single	16
Two to three	19
Four to six	19
More than six	15

TECHNIQUE

	Times
Two instruments	3
One instrument	97
Electrocautery alone	4
Diathermy and electrocautery combined	96

MECHANICAL RESULT

	Cases
Complete collapse	31
Greatly improved collapse	30
Closure of cavity without complete collapse	4
Unsatisfactory collapse	4

PLEURAL EFFUSION SOON AFTER OPERATION

	Cases
Slight (just covering diaphragm)	8
Moderate	2
Much (more than one-third up chest)	2

EFFUSION SOME WEEKS AFTER OPERATION

	Cases
Slight (just covering diaphragm)	12
Moderate	9
Much (more than one third up chest)	4
Obliterative pleurisy	5

SURGICAL EMPHYSEMA

	Times
Slight	27
Moderate	4
Much	4

FEBRILE REACTION

	Times
None	61
Evanescent	31
More than three days	5
More than six days	3

EMPYEMA

One case Tuberculous empyema occurring four months after operation

HÆMORRHAGE

Oozing occurred in one case easily controlled by diathermy

PRESENT CONDITION

In good health (no tubercle bacilli in sputum)	46
In fair health	11
Relapse or extension to other side	7
Very ill	3
Dead	1
Untraced	0

As there has been controversy about the use of diathermy, I would make it clear, as in the previous article, that I abandoned using the cutting current after Operation No 50 in the first series, but I have almost always used the coagulating diathermy current for coagulation before burning, except in obviously avascular adhesions

There is no doubt that often the diathermy coagulating current is unnecessary, but it is a safe guard Coagulation is required for the control of brisk oozing, and for comfort and ease of operating it is highly desirable to be working in a dry, white field, and not in one partially obscured by blood, whether coagulated or not These conditions are more likely to be obtained by the use of diathermy

Finally, I think most workers would agree that for enucleating adhesions diathermy for coagulation is essential My own practice is to enucleate only when necessary

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Clinical and Laboratory Notes

DIVERTICULITIS WITH AN UNUSUAL TERMINATION PYLEPHLEBITIS SIMULATING WEIL'S DISEASE

By W T Cooke, M B Camb, M R C P Lond.

LATE HOUSE PHYSICIAN THE ROYAL HOSPITAL WOLVERHAMPTON

The signs and symptoms of diverticulitis are very varied They may be those of generalised peritonitis acute or chronic "left sided appendicitis," pelvic abscess, acute or chronic obstruction, or carcinoma of the colon, or they may be those of general ill health and vague abdominal pains The case described below had none of these text-book symptoms and the correct diagnosis was only made in the post mortem room

The patient a man aged 34, was admitted to the Royal Hospital, Wolverhampton, on March 1st 1936, with jaundice and pyrexia Seventeen days previously he had been taken ill with shivering attacks, generalised aches and pains, nausea, and slight vomiting He had had some pain in his epigastrium but he was very vague about its character and localisation. He could not remember the exact day when he became jaundiced. He had no itching of the skin Soon after the onset of his illness he had coughed up a small amount of blood He had gradually improved and a fortnight after the onset was allowed to get up His temperature was then normal and he felt quite well The next day he had a recurrence of his symptoms with shivering attacks and a high temperature which had continued until his admission to hospital He had never felt very ill and stated his appetite was gradually coming back His stools had been a normal colour during his illness In normal health he had to take "physic" to get his bowels open regularly

Twelve months previously the patient had had a similar attack of shivering and pain in the epigastrium but without jaundice He worked his own bakery which was situated in an old fashioned house and was formerly infested with rats

Examination and investigations—He was a jaundiced and emaciated man with no petechiæ or purpuric spots His mentality was normal Normal vesicular breathing was heard in the chest with a few crepitations at the bases The pulse rate was 110 and the heart sounds normal The abdomen was slightly distended. The liver was enlarged three fingers breadth below the costal margin and was very tender the spleen was not palpable but there was some tenderness on deep palpation in that area

A blood count on March 2nd showed hæmoglobin, 65 per cent red cells, 3 520,000 per c mm, white cells 20,000 (polymorphs 89 per cent, lymphocytes 11 per cent), colour index 0 92, mean diameter of red cells, 7 8 μ On the same day the fæces were found to contain a small quantity of bile pigment, and the urine scanty granular and hyaline casts abundant pus cells, a fair amount of albumin, and large amounts of bile salts bile pigments, and urobilin The reaction of the urine was acid and sugar and acetone were absent on injection into guinea pigs it proved non pathogenic On March 7th blood culture was negative after 96 hours and on the 10th cultures of fæces yielded no pathogenic organisms though films showed pus cells and few red cells The Wassermann reaction was negative Serum sent to the Wellcome Bureau of Scientific Research did not agglutinate formolised culture of *Leptospira hæmolyticus* and the adhesion test was negative (March 10th) Agglutination tests on blood (March 12th) were negative for *B typhosus B paratyphosus* A B and C *Brucella abortus* Bang *B dysenteriæ* Sonne Shiga and Flexner V W X Y Z *B enteritidis* Gaertner s bacillus and the salmonella group

Progress —The patient took fluids and light diet well. He was rather sleepless and tended to become delirious and restless at night He continued to have one rigor every 24 hours. The jaundice varied in intensity and at times almost disappeared. On the seventh day in hospital (twenty fourth day of illness) he began to have tenesmus and finally he passed several very watery stools *intimately mixed with blood and mucus* The *diarrhœa* was controlled with four doses of tinct opii (♏ 15) and mist cretæ (℥i) which also gave the patient a much needed sleep Collosol calcium 1 c cm for three doses was also given To control the rigors, quinine sulphate grs 10 t d.s was administered This had the desired effect

On March 10th in spite of taking fluids well the patient was becoming dehydrated and was rapidly drifting into a state of cholæmia Continuous intravenous glucose for 31 hours (approximately 10 pints of 5 per cent glucose in normal saline) had a slight beneficial effect but he was now sinking In view of the negative serological findings his condition was diagnosed as pylephlebitis of uncertain origin He died on March 18th

Post mortem findings —A full autopsy was carried out by Dr S C Dyke The body was that of a deeply jaundiced and emaciated man The abdominal cavity was the only area to show features of pathological interest *Four diverticula were present in the distal end of the* descending colon One of these situated in the posterior aspect of the colon, had perforated and formed a localised abscess on the inner and posterior side of the bowel. Pus had tracked up behind the descending colon and infiltrated between the layers of the transverse colon Pus was lying within the peritoneal cavity between the liver and stomach A tributary of the inferior mesenteric vein had become thrombosed. The thrombosis had involved the inferior mesenteric and the splenic veins The thrombus had become infected and the distal end was frank pus The liver contained a large number of abscesses varying in size from a pea to a tangerine Cultures from the pus showed *B coli* The spleen was large and septic ; the kidneys were normal

On admission this patient had signs and symptoms suggestive of Weil s disease and until it had been shown that the urine was non pathogenic to guinea pigs and that the serum did not agglutinate the spirochæte this diagnosis appeared the most likely

Weil s disease is usually transmitted through infected rats The onset is sudden with shivering and muscular pains high temperature (103 –105 F) anorexia, constipation and vomiting Jaundice appears about the fourth or fifth day Hæmorrhages are quite common either from the lungs stomach or rectum The liver is enlarged and tender and the spleen is not usually palpable The blood picture shows a leucocytosis (20 000–30 000 with 80–90 per cent polymorphonuclears) The initial fever falls in about 10–14 days and frequently a secondary fever with temperatures up to 103 F follows for about ten days The disease terminates in severe cases with convulsions and cholæmia.

This general description of the usual features of Weil s disease is at the same time an excellent summary of the illness of our patient and it was only the absence of any of the specific laboratory findings of Weil s disease that made the diagnosis untenable A diagnosis of pylephlebitis then became the only acceptable alternative though no suggestion could be made as to its origin The post-mortem findings of an acute diverticulitis were therefore a complete surprise

Although Mayo[1] has shown that the post mortem incidence of *diverticulitis in all people over forty* is 5 per cent. and in 40 000 X ray examinations was 5 7 per cent it is very rarely encountered at so early an age as thirty four This is borne out by Edwards[2] who examined 114 patients under thirty five with symptoms referable to the large intestine and did not once find diverticulosis Furthermore the case was unusual in that there were no previous symptoms pointing to diverticulitis and also in its mode of termination Though the formation of a localised abscess is one of the ordinary complications, an extension of the inflammation giving rise to pylephlebitis and such large liver abscesses is extremely uncommon

In conclusion I wish to thank Dr J H. Sheldon for permission to publish this case and for his helpful criticisms and advice and also Dr S C Dyke for the post-mortem and pathological reports

A CASE OF DIPHTHERITIC HEMIPLEGIA

By J M Todesco M.D Florence M R C S Eng D P H

RESIDENT MEDICAL SUPERINTENDENT TO THE BOROUGH HOSPITAL, CROYDON

HEMIPLEGIA is an uncommon complication of diphtheria.

A girl aged 9 was admitted to the Borough Hospital on March 18th 1936 as a severe case of diphtheria on the second day She had previously been well apart from measles and whooping-cough in 1929 and chicken pox in 1930

On examination there was extensive membrane over both tonsils profuse rhinorrhœa and enlarged submaxillary glands. She was cyanosed the heart sounds were very soft and rapid (120) She was given 44 000 units of antitoxin 24 000 being intravenous and another 16 000 units later in the day

By March 24th the throat was clean but the glands were still enlarged. Her colour was poor at times and the heart-sounds were still soft and rapid (120) April 1st : gallop rhythm was noted and the first sound at the apex was muffled.

On April 2nd she suddenly developed a right sided *flaccid hemiplegia, the face arm and leg being paralysed* The knee-jerks and the right abdominal reflex were absent and Babinski s sign was positive on the right She was drowsy speech was indistinct and she had incontinence of urine The pupils were equal large and reacting to light The first sound at the apex was still muffled but the rate slower (96) By April 3rd, though the right arm and right side of face were still completely paralysed there was very slight movement of the right leg Her speech was indistinct but she appeared to understand when spoken to Right palatal paralysis with difficulty in swallowing was now noted. April 7th : the paralysis of the right leg had disappeared and she could move it freely but the knee jerks were still absent Her condition was otherwise unchanged. A week later she could slightly flex and extend the right forearm but she could not abduct it or lift it voluntarily The right facial palsy persisted. Her speech was slurred and she took some time to answer questions She still had palatal paralysis a nasal voice and dysphagia The heart sounds were sharp and rapid (100) *Bilateral ptosis with slight right* internal strabismus appeared on April 25th

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[1] Mayo W J Quoted by H C Edwards (19[illegible]) *Lancet* 1 1527

[2] Edwards H C (1934) *Lancet* 1 221

There was little change in her condition until May 6th, when there was more movement in the right forearm and hand She had definite right wrist drop with contraction of fingers and loss of hand grip She was now able to abduct her right arm By May 13th palatal movement had returned and the ptosis and right facial paralysis were less marked. The heart sounds were stronger and regular On May 22nd slight flexion of the fingers was possible By May 28th there was considerable general improvement, though the patient appeared mentally confused at times She could now flex her right wrist slightly and use her fingers, though they were still contracted

She got up for the first time on June 6th, and a few days later could take a few steps with support Her right leg and thigh muscles were wasted, the knee jerks absent, and she dragged her right foot when walking The right hand and wrist showed marked improvement By June 30th she could use her right leg and foot and lift this off the ground, and grip objects with her right hand, though she still had difficulty in extending her fingers

When discharged from hospital on July 21st her gait was practically normal, though no knee jerks were obtained, but there was still some weakness in the right facial muscles, right wrist, and fingers The speech was normal

Points of interest in this case are the sudden onset of a flaccid hemiplegia in the third week of a severe case of diphtheria, with rapid recovery in the use of the right leg and comparatively early recovery of the paralysis of the face and right arm

In similar cases reported during the last few years by Benn and Alstead (1931), and Chamberlain and Alstead (1931), the hemiplegia though flaccid at first later became spastic, with a permanent lesion in the affected leg This does not appear to have occurred in this case The hemiplegia might possibly have been due to diphtheritic embolism or thrombosis, though there was no apparent permanent damage to the heart as has been noted in other cases

I am indebted to Dr Oscar Holden, medical officer of health for Croydon, for permission to publish this case

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FLUORESCEINURIA

By George Discombe, B Sc Lond
JUNIOR DEMONSTRATOR OF CHEMICAL PATHOLOGY
ST BARTHOLOMEW'S HOSPITAL LONDON

The urine passed after a dose of fluorescein shows an intense green fluorescence If the dye has been deliberately administered such a urine will cause no surprise but if it has been given as a practical joke, or in a proprietary drug some alarm may be caused At St Bartholomew's Hospital two cases have lately been seen in which it followed the use of Ephazone, a proprietary remedy for asthma which is claimed to contain 28 different drugs

The dye is excreted fairly rapidly by the kidneys As an experiment, one tablet of ephazone was given to a man of 70 kg weight and fluorescein was found in the urine passed at the end of the first hour, it was still present at the end of the eighth hour, but absent at the end of twenty four hours The greater part of the dye was excreted during the first four hours In the serum of blood collected at the end of the first hour no dye could be detected

The presence of fluorescein in urine should be suspected if a normally coloured urine shows an intense grass green fluorescence If the dye is present, spectroscopic examination should show an absorption band between 506–482 mμ (maximum at 494 mμ) (almost identical with that of urobilin) with general absorption on the blue side of 430 mμ, though in concentrated solution the band cannot be distinguished from the general absorption On acidifying such a urine with hydrochloric acid the fluorescence and absorption band disappear

SEPARATION AND IDENTIFICATION

The dye may be separated from urinary pigments and, if present in fair concentration can be converted to eosin. The urine (50–500 c cm) is acidified with 1–2 c cm concentrated hydrochloric acid and extracted with 25 c cm. amyl alcohol The amylic layer is separated and extracted first with 100 c cm water containing 20 drops 40 per cent. caustic soda and then with 50 c cm water the washings are united in a 250 c cm measuring cylinder, 50 c cm. alcohol is added to prevent turbidity, and the quantity is made up to 250 c cm with water A clear solution is thus obtained which shows the characteristic fluorescence yellow colour, and absorption band of the dye at a dilution greater than one part of dye in 5,000,000 of urine

To convert to eosin, 100 c cm of the clear alkaline solution is made acid with hydrochloric acid and 1 c cm bromine water added After mixing the solution is made alkaline with caustic soda, when it becomes pink with a yellowish green fluorescence, and if fairly concentrated shows an absorption band between 515–525 mμ (b to E lines) This reaction is not easily obtained with dilute solutions of fluorescein, owing to some destruction by excess bromine and thicker layers of solution (2–4 in) should be examined for the bands With both dyes the fluorescence is visible at much greater dilution than is the absorption band. even when 4 in layers are examined with the spectroscope,

In examining urine for eosin it was noticed that the absorption bands of eosin varied with solvent In water and diluted alcohol only one band, between 434–560 mμ, with a maximum at 515–525 mμ, can be seen, in amyl alcohol either one or two bands may appear, according to concentration, the more intense being centred at 532 mμ the weaker and more diffuse at 496 mμ

To test for eosin in urine it was found convenient to acidify 200 c cm urine with 1 2 c cm hydrochloric acid and shake out with 25 c cm amyl alcohol, to the separated amylic layer an excess of solid sodium acetate is added and the solution examined spectroscopically Using a 1 in layer the band at 532 mμ is visible at a dilution of 1 in 750 000 corresponding to about 1 in 5,000,000 in the urine An hour after 0 1 g had been taken by mouth the dye was present in the urine, it could be detected up to the end of the sixth hour, but not subsequently

The figures for the wave lengths of absorption bands are not of great precision Where comparable, they agree well with those obtained by H S Uhler and R W Wood (Atlas of Absorption Spectra, Washington, 1907)

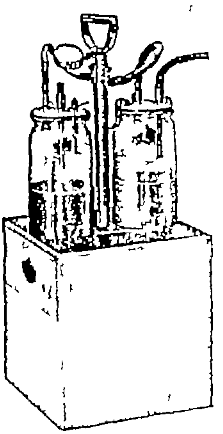
NEW INVENTIONS

AN ELECTRIC ASPIRATOR

The frequency of pleural effusions in artificial pneumothorax treatment and the necessity for their removal demands efficient and labour saving apparatus An aspirator has therefore been designed with the following main objects —

(1) To remove fluid by constant suction
(2) To eliminate all fatigue for the operator
(3) To allow the operator to have complete control over the position and direction of the aspirating needle throughout the operation and if necessary at the same time to be able to control a pneumothorax needle to introduce air into the thorax

The apparatus consists of an electric motor which drives a small but very efficient suction pump This is enclosed in a felt lined box and controlled by a foot switch, which when not in use can be stored in another compartment The suction pump is



connected to a graduated bottle in the lid of which are fitted two valves one automatically cuts off the suction when the bottle is full thereby preventing any fluid reaching the motor and the other regulates the amount of suction which can be varied from 2 to 600 mm of mercury The degree of suction is registered on a manometer conveniently placed in a prominent position A second graduated receiver is provided so that in cases where there is a profuse amount of fluid the operation can proceed without having to empty the bottle (see Figure) By reversing the tubes the apparatus will give positive pressure and since the motor is controlled by the foot it leaves both hands free to direct an insufflator or nebuliser quite accurately on any desired area in laryngeal work Owing to the excellent degree of suction obtainable the apparatus becomes useful in bronchoscopic work for it is smooth and continuous and can be graduated accurately Complete control over the aspirating needle is obtained and all jerky movements are eliminated As the operator's hands are free the patient and needle can be placed in any desired position so that a complete aspiration of the fluid present is possible

A lighter apparatus on the same principle is made for ward use. In this the motor and foot switch are not enclosed in a box so that although the instrument gains in portability it is not so silent and compact as the heavier model.

In designing the apparatus I have been assisted by Mr C Gore-Yeo who has made some valuable suggestions that have been adopted. The apparatus is made by John Bell and Croyden of 50 Wigmore street, London W 1

FREDERICK HEAF M.D Camb
Formerly Medical Superintendent of the Colindale Hospital Hendon N W

MEDICAL SOCIETIES

ROYAL MEDICO-CHIRURGICAL SOCIETY

AT a meeting of this society at Glasgow on Dec 18th Mr G H EDINGTON the president, in the chair a short paper on

X Ray Dosage

with reference to malignancy was read by Dr FERGUS L HENDERSON who discussed the difficulty of accurately measuring X ray doses. He said that, while it was now possible to determine accurately the number of *r* units that were being given it was impossible to forecast exactly what effect any particular dose would have on the skin of any patient. The common procedure to-day was to give heavy doses of X rays well filtered over a period of 3–6 weeks The tendency therefore of patients to omit a day's treatment for various reasons made it impossible to give accurate doses He urged that wherever possible patients should be told the truth about the disease from which they were suffering since it was otherwise almost impossible to get them to submit to the suffering and discomfort from the heavy doses of X rays required to produce retrogression of a tumour growth

Dr NOAH MORRIS in a paper on the significance of

Plasma Phosphatase in Bone Disease and Jaundice

said that since Robison's work on phosphatase had been applied to clinical conditions variations in plasma phosphatase had been studied in numerous pathological states especially those affecting osseous tissue The presence of the ferment in the blood might be taken as a rough estimate of its production in the tissues but it was quite possible that an increase might be due to diminished utilisation in its place of origin Plasma phosphatase was much increased in Paget's disease generalised osteitis fibrocystica moderately raised in rickets, osteomalacia and bone cancer and slightly above normal in osteoporosis and osteopetrosis In multiple cystic tumours of bone a great increase in plasma phosphatase might be very useful in determining whether or not there was over production of the parathyroid hormone and therefore whether operation was needed It was not of much value in the early detection of either Paget's disease or osteitis fibrocystica since changes were generally seen in the skiagram before the phosphatase was increased An analysis of phosphatase estimations in a group of 500 infants and young children had shown that while in a small number of cases the phosphatase was not increased even in the presence of clinical and radiographic signs of rickets there was on the whole a moderate degree of correlation between the amount of the plasma phosphatase and the severity of the disease In untreated active rickets the phosphatase continued to increase and a stationary value might be taken as early evidence of healing The rate of fall depended on the dosage of vitamin D The estimation of plasma phosphatase had a place in the diagnosis of the preclinical stage of rickets but it could not by itself be used to indicate in a single patient either the severity of the rachitic process or the presence or absence of healing

While it was true that the phosphatase was generally much increased in cases of obstructive jaundice but moderately raised in toxi infective and within normal limits in hæmolytic jaundice there was such an overlap of figures that the determination of plasma phosphatase was of little value in making a decision about the nature of the jaundice Clinical data obtained in association with Mr A B Kerr showed that removal of bile by means of a bile fistula might lead to a great increase in the plasma phosphatase without causing a significant alteration in the bilirubin content of the blood It was known that the absence of bile from the duodenum led to a defective absorption of lime Personal experience had indicated that a calcium poor diet caused a pronounced increase of plasma phosphatase It was suggested therefore that in jaundice and other conditions an increase in plasma phosphatase occurred whenever the retention of lime was insufficient to meet the demands of the osseous tissue

Dr ANGUS SCOTT described in detail a case of chronic adhesive pericarditis of tuberculous origin which operation had failed to relieve

REVIEWS AND NOTICES OF BOOKS

Clinical Psychology

A Handbook of Children's Behaviour Problems
By C M Louttit, Director, Indiana University Psychological Clinic New York and London Harper and Brothers 1936 Pp 695 12*s* 6*d*

The child guidance movement is gradually developing a literature of its own Recently there was Dr Kanner's book, frequently quoted in the book under review, and written from the standpoint of a psychiatrist Mr Louttit is a psychologist but, while psychological aspects naturally predominate in his book, he is fully cognisant of the contributions that medicine education, and sociology have to make to the working of a psychological clinic, and gives due attention to those aspects The book is comprehensive in its survey, covering not merely the personality and behaviour problems strictly so called, but also the grosser abnormalities such as mental defect and the psychoses as they affect children There are sections on speech and sensory defects, on neurological and physical disabilities such as encephalitis, epilepsy, and even malnutrition A preliminary chapter deals with diagnostic methods, briefly but sufficiently to put the student on the true line of search for fuller information

In a book covering so wide a range we can do no more than select one section for special mention The chapter on mental defect is practical and sound in its teaching The author sees no hope in gland-therapy or in psycho analysis for improvement of intelligence, but contends that the defective need not be a social problem if he is adequately trained. His classification of the grounds for institutional custody or training is a useful one for examiners The preventive aspects of mental hygiene are not overlooked Growth and guidance in psychosynergic traits (temperamental and emotional) are, he contends, as important as growth and guidance of intelligence A feeling of security is fundamental to a child's mental growth, and this calls for stability in the home, and stability in his teachers in school

As a text book for students of clinical psychology this work is admirably adapted for its purpose The treatment in each section is full, the arrangement systematic, the case histories illustrative and helpful. It is written in an easy style and may be commended not only to workers in the child guidance movement but to the pædiatrician, and especially to the practitioner who wishes to supplement his knowledge of the physical development of the child by some understanding of the concurrent psychological growth

The Queen Charlotte's Textbook of Obstetrics

Fourth edition By the Eight Members of the Clinical Staff of the Hospital London J and A Churchill Ltd 1936 Pp 674 18*s*

Regularly, and precisely at intervals of three years, the staff of Queen Charlotte's Hospital, albeit with assistance from outside, produce (or should we say reproduce) a new edition of their text book The first child, though long overdue was well received, and each successor has been accorded an even more enthusiastic reception This edition differs from its predecessors in many respects The sections dealing with the toxæmias and vomiting in pregnancy have been rewritten. The authors will not admit that the underlying cause of hyperemesis gravidarum may be a neurosis, they regard the neurotic element "as a very important factor in many cases, yet believe that in many, if not all, there is some additional factor of more or less importance" The chapter dealing with the toxæmias is essentially practical, concise, and businesslike Much rubbish has been cleared away, the student and practitioner are not presented with several alternative methods of treatment One line of treatment, pre eminently sound and full of common sense, is described, and this is based for the most part on the hospital practice

The difficult subject of puerperal sepsis receives close attention We know of no other text-book of obstetrics in which it is treated so thoroughly, full use being made of temperature charts and the coöperation of the staff of the research laboratories In the chapter on anæsthesia in obstetrics are described various methods of inducing narcosis or anæsthesia It would appear that the chloral bromide laudanum mixture, the use of scopolamine narcosis for the first stage, and the administration of small quantities of chloroform vapour by the Junker's inhaler during the pains of the second stage still hold the field The dangers accompanying the use of the barbiturates and the practical difficulties of nitrous oxide anæsthesia are clearly and fairly set forth

The book is a faithful exposition of English obstetric practice Paper, printing, and illustrations are of the best It may be confidently recommended to all who learn or practise obstetrics

An Introduction to Dermatology

By E H Molesworth, M.D, Ch.M. Sydney, Lecturer in Diseases of the Skin, University of Sydney, Dermatologist to Royal Prince Alfred Hospital and Prince Henry Hospital, Sydney, &c. London J and A Churchill Ltd. 1937 Pp 520 25*s*

A foreword by the late Prof Joseph Jadassohn, who did so much for dermatological science, and who will rank with Darier, Sabouraud, and Bloch as a leading representative of the era in which he worked, characterises Dr Molesworth's book as "the fruit of most serious labour" and this is the impression which it will generally establish

The arrangement follows classical lines, and is well balanced in a sequence of thirteen chapters There is a pleasing brevity of anatomical and physiological description, and the author passes almost at once to the consideration of the effects of deficiency and excess of sebaceous secretion, a matter of fundamental importance not only in the diagnosis but in the course and treatment of all cutaneous disease. Seborrhœa and ichthyosis are both regarded as in some measure hereditary in tendency, and grouped with hypertrichosis and hyperidrosis, tylosis and epidermolysis bullosa in one chapter as abnormalities Much thought and study have been given to the chapter on the allergic diseases The extensive literature of this subject, and the confusion that has arisen by reason of a careless diversity of terms and nomenclature, render a clear conception of the present state of our knowledge a task of the utmost difficulty The author has done wisely in avoiding an involved discussion of the theoretical problems in favour of certain practical applications such as skin testing desensitisation and the uses of tuberculin and trychophytin in diagnosis and treatment. That all our present methods of desensitisation are "capricious" in action is a truism which none will dispute. The author has a good deal to say on the subject of leprosy to which Australian and Polynesian aboriginals are *highly susceptible. He protests against* compulsory segregation as tending to concealment of symptoms in the early stages to the development of "leprophobia" and as being unfair in view of much less stringent regulations in the case of far more infectious diseases—syphilis and tuberculosis

But it is in his chapter on radiotherapy that Dr Molesworth really excels Much of it is highly technical and beyond the comprehension or the requirements of the average reader It seems that he prefers the X ray tube to all other methods of radiation treatment for cutaneous epitheliomata (so common in Australia) and finds but little use for radium and scarcely any for the surface applicator In this respect, as he doubtless knows, the balance of dermatological opinion is against him and in delicate and inaccessible situations such as the angles of the orbit radium plaques will continue to be employed Worthy of careful study is his claim for the treatment of cavernous nævi in young children by X radiation and the account of an original technique for the purpose.

In this book Dr Molesworth has added to a literary achievement which is already considerable It should have a great success in Australia where we believe it to be the first production of its kind.

Prelude to Chemistry

By JOHN READ ScD F R S Professor of Chemistry in the University of St Andrews London: G Bell and Sons Ltd 1936 Pp 328 12s 6d

THE search for the philosopher's stone and the elixir of life occupied some of the busiest wits of the world for more than 1000 years and some reflection of the ideas and notions which guided the hunt are *still perhaps to be found in the less sophisticated* arts of medicine Alchemists at any rate cleared the field for what we know as chemistry and Prof Read gives an interesting account of their doctrines and how they thought and what they did. It all seems very strange and fantastic to us but before we despise or laugh at it too much it is well to remember that Isaac Newton was a keen member of the cult and that our successors 200 years hence may find our own principles and practice equally remote from reasonableness The abundant and excellent illustrations are due to the Carnegie Trust

Essentials of Modern Medical Treatment

By VINCENT NORMAN M D M R C P Lond F R C S Edin D P H Lond London: Hutchinson's Scientific and Technical Publications 1936 Pp 200 10s 6d

BOOKS on treatment continue to appear in astonishing numbers Dr Norman writes as a practitioner for practitioners aiming above all things at brevity He takes the main diseases of the text books and tells the doctor what treatment he should apply or what he may try for each one In general he is orthodox Much of his advice is obviously the product of experience and judgment and consequently good Some is clearly second hand Drugs and prescriptions figure largely and he has a surprising faith in some e g administration of parathyroid extract by mouth and anterior pituitary for hypotension Although in such respects he is a little less than modern he mentions most of the outstanding therapeutic discoveries of recent years Some of his "don'ts" are very welcome such as "there is no need to restrict the consumption of meat in migraine" His book may be very useful to the practitioner who has little time and not a great deal of experience

Public Health and Hygiene

A Students Manual. Second edition. By CHARLES FREDERICK BOLDUAN M D Director Bureau of Health Education Department of Health City of New York and NILS WILLIAM BOLDUAN M D Children's Medical Service Bellevue Hospital New York. Philadelphia and London: W B Saunders Co Ltd 1936 Pp 371 12s 6d

THE senior author of this book is one of the leading American hygienists and in this manual he has attempted and achieved the ambitious task of presenting the theory and practice of modern hygiene in a simple, short narrative as free as possible from technical expressions and within the understanding of any intelligent person Though this is a second edition it has been so completely revised that it is practically a new work. As a students manual it is too slight for British public health students but is eminently suitable as an introduction to epidemiology for those taking the curriculum of general medical education It is equally serviceable for nurses taking the health visitor's certificate and is within the capacity of social workers interested in public health. Unfortunately from our point of view it is American based mainly on New York practice and experience but this does *not detract from its value to British* students, except in so far as laws and regulations are concerned The characteristic of the book is the approach to preventive medicine through history However important history may be in general medicine it is vital to epidemiology which largely is history For this reason the manual fills a gap which is ill bridged by English medical literature It is short, concise, well illustrated and preeminently readable. The portraits and reproductions of old prints are valuable

Neuro embryology

An Experimental Study By SAMUEL DETWILER Professor of Anatomy College of Physicians and Surgeons Columbia University London: Macmillan and Co Ltd 1936 Pp 218 16s

THIS is the second volume in a series of monographs on experimental biology Books of this sort are needed for there are many to whom the findings of experimental biologists are of interest or of great importance who have not the opportunity or time for searching the extensive and scattered literature This book is an excellent example of the kind of thing required *It is clearly written and well put together* so that the reader need be in no doubt about the bearing of the experimental work on the question under consideration Prof Detwiler deals with such matters as the rôle of the neuroblast and sheath cell in development the behaviour of nerves in the presence of grafted limbs the responses of nerve centres to peripheral alterations the proliferation of neural cells under various conditions He describes many interesting experiments on somites and on segmental characters in the cord, and devotes a chapter to observations on the giant Mauthner's cell and the ear vesicles of certain fishes and amphibians Results, of course, cannot be applied at once to human material, but many of them may be found to have a wider bearing, for example, the heterotopic grafts (lateral to somites) of regions of the cord, leading to great hyperplasia, hold a possible interest for the pathologist The author does not lay much emphasis on the magic word "gradient"—for which many will be thankful, he regards the views of Weiss on direction of nerve growth as a more reliable guide Altogether an excellent monograph

Statistical Methods in Biology, Medicine and Psychology

Fourth edition By C B DAVENPORT, Carnegie Institution of Washington, and MERLE P EKAS, Northeast High School, Philadelphia New York John Wiley and Sons London Chapman and Hall Ltd 1936 Pp 216 *13s 6d*

THIS little handbook first appeared in 1899 Since then the use of statistical methods has become much more widely extended in every branch of science, and the number of English text books has been steadily increasing both in this country and the United States This particular one, in spite of complete revision, can hardly be regarded as a serious competitor with the best of them, but it may well be useful to those who like to be told what to calculate without much elaboration of the when and why To those interested in the latter it seems odd, for instance, to find the probable error introduced before the standard error, and the latter defined as 1/0 6745 times the former And to include correlation due to a common factor affecting both variables under the heading "spurious" seems to give a connotation to that term that might lead a student to confuse correlation with causation

The arithmetical examples are clearly set out, and the last fifty pages are devoted to useful formulæ and tables, e g a short table of values of the normal probability integral a table for use in the analysis of variance tables of powers and factorials of integers, &c The inclusion of these certainly makes it a convenient book to possess, even by those who prefer to rely on more elaborate text-books for their guidance in statistical methods

Modern Urology

Third edition By HUGH CABOT, M.D, LL D, C M G, F A C S, Professor of Surgery, Mayo Foundation, Graduate School of University of Minnesota London Henry Kimpton 1936 2 vols Pp 951 and 862 *£4 10s*

TWENTY years have elapsed since the first edition of this important work appeared, and twelve since the second When the first preface was written by the same editor urology was in its infancy It was termed genito urinary surgery and usually combined with the practice of syphilology, few people regarding it as a specialty even in that land of specialism America Now urology has grown to manhood and is recognised by all (except certain diehards) as a special branch of medicine with its own exponents its own armamentarium, and its own literature In the last named the book before us occupies an important place Not only has America contributed many of the most valuable advances in this science, but Dr Cabot has an experience that is second to none He has not attempted to cover the vast ground by his unaided efforts, he has instead chosen a team over whom he has exercised the function of a wise and experienced captain. Death has removed several of the writers who contributed to the earlier editions, but the general standing of the present contributors is high

In the first volume, J C C Corbus provides an excellent description of those rarer entities amongst venereal diseases chancroid, granuloma and lymphogranuloma inguinale So much confusion exists on the subject of what are loosely known as soft sores and chancroids, that an accurate and complete description of non syphilitic infections of the genitals is to be welcomed Later in this volume appears the completest extant description of that controversial subject, the pathogenesis of genital tuberculosis. The final third is devoted to an account of prostatic obstruction by H H Young, Lloyd G Lewis, Bentley Squire, and H C Bumpus Although many changes have occurred in America in the technique of transurethral prostatectomy during the last few years, it seems that the modification of the suprapubic operation that has aroused much interest in England namely the Harris operation, is not regarded with much favour

The second volume is devoted to diseases of the bladder, ureters, and kidneys Unfortunately the chapters on urinary infections were written too soon to allow of the inclusion of the latest method of treatment by sodium mandelate A graver omission is the lack of reference to dyectasia vesicæ or obstruction of the bladder neck apart from prostatic enlargement These cases of what the French formerly termed "prostatisme sans prostate" are now accepted as a clinical entity, and might well have had a special heading

As a work of reference this book should be valuable, and the complete and up to-date bibliography at the end of each chapter adds greatly to its value.

REPORTS AND ANALYSES

VERMOUTH STAMBOIS, RED AND DRY

STAMBOIS (FRENCH VERMOUTH) LTD 5 MILES STREET,
LONDON S W 8

ON analysis these vermouths were found to have the following composition —

	Red	Dry
Present gravity	1027 9°	1001·01°
Alcohol by volume per cent	15 5	18·0
Equivalent to proof spirit per cent	27 1	31·4
Fixed acidity (as tartaric acid) per cent	0 51	0·56
Volatile acidity (as acetic acid) per cent	0 05	0 03
Total extractives per cent	12 0	5 85
consisting of—		
Cane sugar per cent	Nil	Nil
Grape sugar (dextrose) per cent	9 41	3 61
Ash per cent	0 34	0 33
Other extractives per cent	2 25	1 91

These two wines possess the agreeable palate and aroma characteristic of the best sweet and dry vermouths The sugar content is lower than in some brands The wines are fortified From a consideration of the analyses there is no evidence that sugar other than that natural to the constituents has been added No salicylates or other deleterious substances were found Skilful blending has resulted in products free from excessive sweetness or dryness

THE LANCET

LONDON SATURDAY JANUARY 9 1937

THE RISK OF ATTENDANCE ON THE TUBERCULOUS

OPINIONS have long differed and differ still about the risks of infection run by nurses and others in contact with consumptive patients More than a century ago, when KEATS went to Italy towards the end of his last illness fear of contagion there was so great that he had to haul up his food through his window At that time in England phthisis was considered no more than a hereditary taint and this belief was only gradually shaken after KOCH's discovery of the tubercle bacillus In an address to the British Medical Association at Worcester in 1882 THEODORE WILLIAMS[1] considered the evidence of contagion among doctors nurses and domestic staff working at the Brompton Hospital since its opening in 1846 Although allowances must be made for failure to diagnose lesions which would now be visible on X ray examination, his observations have an important bearing on the problem as we have it to-day on account of the fact that the degree of exposure to infection was then far higher than would now be tolerated in any hospital. For instance as he tells us, spittoons were not disinfected unless the odour became unpleasant the system of ventilation, moreover was designed primarily to produce a warm draught-free atmosphere In winter the air was heated before admission, and before 1877 when extraction was helped by the insertion of steam pipes in the ventilating towers the removal of foul air had been so defective in parts of the building that outbreaks of erysipelas and sore throat had occurred in 1869 and 1875 In spite of these fearsome conditions of 75 house physicians who had been in residence since 1867 (WILLIAMS had traced all except 3) 69 were well and working 2 had died from consumption (but one of these had had hæmoptysis before becoming a resident) 1 had died from another cause and 1 had become consumptive but had recovered Between 1846 and 1867 1 nurse contracted phthisis while in the hospital 3 more died from this disease after leaving 2 of them many years later Between 1867 and 1882 out of 101 nurses 1 died of phthisis and 2 from other causes The follow up of the domestic staff —maids and porters—was too imperfect for statistical purposes 1 death from phthisis is recorded and 6 from other causes In view of the fact that at this time the death rate from tuberculosis was about four times its present figure the observations of WILLIAMS do not suggest that exposure to massive doses of tubercle bacilli was then highly dangerous to adults

Until recently the general attitude in this country has been that provided proper precautions are taken the risk of a nurse catching tuberculosis from a patient is slight But this equanimity has been shaken by a number of reports, coming chiefly from Scandinavia and the United States Two important papers[2] set out clearly the results of recent investigations In one of these Dr J HEIMBECK of Oslo records his observations over more than ten years, on a nursing personnel of about twelve hundred all of whom were exposed to infection He notes the different effect of such exposure on nurses who had escaped childhood infection from those who were already Pirquet positive when they began their hospital work. Among 625 nurses Pirquet-positive on arrival there was no death from tuberculosis but 27 showed signs of tuberculous activity (4 with T.B + sputum) Of 280 nurses Pirquet negative on arrival there were 10 deaths from tuberculosis and 96 showed signs of activity (13 T.B + sputum 2 meningitis) So striking was this contrast that since 1927 many of the Pirquet-negative nurses have been given B C G In a final survey HEIMBECK gives the following figures —

(1) Morbidity amongst those who have passed the primary infection without becoming ill 800 persons—3502 observation years—30 persons ill Morbidity: 8 5 per 1000 observation years.

(2) Morbidity amongst those Pirquet negative (107 of whom still negative after B C G): 387 persons—675 observation years—118 persons ill. Morbidity 152 9 per 1000 observation years.

(3) Total morbidity among B C G vaccinated: 489 persons—1200 observation years—33 persons ill. Morbidity 26 1 per 1000 observation years

(4) Morbidity amongst those vaccinated until Pirquet positive: 287 persons—910 observation years—8 persons ill (1 death) Morbidity: 8 3 per 1000 observation years.

The other paper by Dr E S MARIETTE of Glen Lake Sanatorium Minnesota contains an impressive review of the subject Since 1921 of 2084 nurses X rayed at the sanatorium 1567 have been followed up of this number 7 7 per cent had evidence of adult tuberculosis on the first film and 4 1 per cent later developed phthisis Although none of this group died MARIETTE concludes that there is a certain hazard in nursing and that nurses have the right to expect adequate precautions and control. Since 1932 305 student nurses have been tuberculin tested of 191 (52 per cent) tuberculin positive 152 were followed up and 1 developed adult tuberculosis of 174 (48 per cent) tuberculin negative 141 were followed up and 4 developed adult tuberculosis These figures support, on a smaller scale HEIMBECK's conclusion that it is the tuberculin negative nurse who runs the greater risk MUCKE[3] whose investigations cover 4281 nurses and nuns at the Eppendorf Hospital found 150 cases of tuberculosis before 1918 the incidence was only about 1 per cent but it subsequently increased to 4·0 per cent. Persons with a negative tuberculin reaction it has been suggested have two chance when exposed to tuberculosis the argument being that they may develop a benign first infection Logically the argument would lead to the personnel of a sanatorium being treated like a herd of T T cattle and the positive reactors eliminated But the facts at our disposal do not support this line of reasoning, although admittedly there is some discrepancy between the observations on nurses and similar surveys of other groups such as native miners in South Africa and students in the United States It is significant that Dr MARIETTE did not at first tuberculin test his nurses because he thought they would all be positive, yet when routine tests were made in 1932 the proportion of negative reactors was 48 per cent

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[1] Brit med J 1882 2 618

[2] Tubercle December 1936 pp 97, 103

[3] Beitr Klin Tuberk [illegible] 155

In this country the Joint Tuberculosis Council has just published a memorandum based on material collected from 38 hospitals and sanatoria The usual age at which probation nurses are accepted is, it seems, 18 years, and in view of the special susceptibility to tubercle of adolescent females the Council deprecates the practice in certain areas, where there is a shortage of candidates, of reducing the age of entry to 17 Hours of work varied from 48 to 77 per week, the average for probationers being about 60, a somewhat longer period than that recommended by the College of Nursing At present only about half the institutions circularised make a routine X ray examination of their nursing staff, the Council recommends that the staff should be thus examined at least once a year wherever nurses are exposed to tuberculous infection No mention is made in the Council's memorandum of tuberculin tests, but Dr PETER EDWARDS [4] has just published a small series from the Cheshire Joint Sanatorium which appears to support HEIMBECK'S findings On joining the hospital staff 54 nurses were Mantoux-positive and 11 negative, of the latter group 2 developed tuberculosis, both within three months An investigation on a larger scale is being carried out under the Prophit Trust The practical issues raised by these observations are momentous It appears that whereas a few decades ago tuberculous infection was almost universal, by the time adult years were reached, this is no longer the case The great diminution in the number of open cases of tuberculosis, the gradual education of the public in matters of hygiene, in particular as regards spitting in public, and the provision of clean or pasteurised milk have conspired to make tuberculous infection less frequent in youth No doubt the reduced risks of infection achieved in these ways have contributed to the fall in the mortality rate, but at the same time the dangers of infection in early adult life seem to have become more serious than they were in THEODORE WILLIAMS'S time Doctors and nurses who come into close contact with open cases of tuberculosis will either have to be chosen from amongst the positive reactors or to undergo some form of inoculation to make them tuberculin sensitive As the proportion of negative reactors rises the dangers of one spouse infecting the other must also be expected to increase

FRACTURE CLINICS

THE great majority of all fracture cases are treated at hospitals, and the responsibility for the efficient treatment of fractures has in recent years come to lie very heavily on the conscience of hospital staffs After conference between representatives of the British Medical Association and the British Hospitals Association a questionnaire was sent out to discover how far the hospitals had accepted the principle of segregation of fracture cases in special departments under the charge of a qualified team of surgeons The answers received from fifty-one hospitals are tabulated in a memorandum (No 104) recently published by the Central Bureau of Hospital Information These show that the principle has been accepted and is already being acted on in forty-one hospitals, three others have the scheme under consideration, seven have considered and rejected it The size of the hospital and the numbers of fractures attending for treatment influence the replies A small hospital, even though accepting the principle of placing the whole fracture service under control of a specialist in bones and joints, obviously is not in a position to appoint " a team of whole time assistants "—to quote the wording of the questionnaire The Royal United Hospital at Bath, for instance, with 190 beds, agrees to the appointment of a specially qualified head of the fracture service, but answers " numbers insufficient " to the suggestion of appointing a team of whole-time assistants Others answer " Yes, but not necessarily whole time," or words to that effect From the account of the Cardiff municipal accident service, which we print on page 107 of this issue, it will be seen that with an average of 100 cases under treatment it has been found possible to retain a resident assistant surgeon, chosen specially for his knowledge of fractures, by combining the work of the fracture clinic with certain hospital work outside it

The hospitals were asked to give an opinion as to the usefulness of a whole time salaried officer of the almoner type whose duties would be to keep the records of cases The practice varies considerably In some cases the records are kept by the registrar, in others by the massage sister, frequently a part-time clerk is employed It is obviously a waste of the surgical assistant's time for him to write notes, answer in his own hand letters from general practitioners, and be responsible for the filing of records, when all this can be done at his dictation, and more efficiently done, by a clerk The fact that much tedious clerical work has been imposed on the medical staff no doubt explains why records are not available at so many hospitals Several hospitals stated that the reluctance on the part of the general surgeons to give up their fracture work was an obstacle in the way of placing all fractures under the control of one experienced specialist Out-patients may be referred to a particular surgeon who wishes to deal with them himself Nevertheless a large number of the hospitals consulted were of opinion that all ambulant fractures should attend the special department throughout their treatment—this not so much to take fracture treatment out of the hands of a general surgical staff who are often quite competent to deal with it, but to remove the responsibility from the young casualty officer who rarely is The new hospital at Southend-on Sea provides that any fracture case specifically sent to one of the general surgeons may be treated by him but he is invited to refer it to the fracture clinic

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[4] *Tubercle* December 1936 p 101

NASAL SINUSITIS IN CHILDHOOD

Do children often have infected nasal sinuses ? Opinions differ In the United States when a child has an upper respiratory infection the diagnosis is almost as likely to be sinus suppuration as tonsils and adenoids On the other hand HAJEK of Vienna in his classical work Nasal Accessory Sinusitis' written in 1026 reported that he had seen only 4 cases of antral empyema proved by puncture in children between the ages of five and twelve and said that the fantastic reports of some American authors are to be regarded with great scepticism as their methods of examination give us no assurance of the reliability of their results ' In this country the general opinion seems to be that the disease is not very common although within the last ten years it has been realised that it is commoner than was previously supposed there is also an impression that in children sinusitis is usually transitory with a tendency to recovery

Mr JAMES CROOKS [1] has now published the results of an important investigation which he has made at the Hospital for Sick Children Great Ormond street from which it appears that the disease is far more frequent than is usually believed and less likely to clear up spontaneously His material falls into two groups In the first both antra were aspirated in 100 children while undergoing tonsillectomy This routine was chosen for four reasons the patients were suffering from an upper respiratory complaint, possibly due to antral infection the puncture could readily be done while they were under the anæsthetic it was desired to prove if it was true or not that removal of tonsils and adenoids usually cleared up an antral infection and finally children with a temporary infection from a cold would be automatically excluded Any antrum containing pathological matter was to be subjected to aspiration again six months later Of these 100 children 24 were found to have pus or mucus in an antrum (6 of them in both antra) and in only 9 of these were the antra clear at the end of six months in other words 15 per cent had chronically infected antra Their average age was seven years The fluid sucked from the antra was examined bacteriologically by Dr A C SIONX in all the 100 cases and it is remarkable that of those antra that contained neither pus nor mucus only about half were sterile Mr CROOKS does not explain this anomaly but says that it seems reasonable to suppose that the great majority of healthy antra are sterile though it is not accurately known how often a healthy sinus contains a few organisms Some of the antra that still contained muco-pus after six months were sterile as were 3 containing muco pus at the first puncture, it has been observed that organisms may die out in a long standing abscess such as a pleural empyema, and this may presumably also happen in a nasal sinus The pneumococcus was the organism most often found in these children. The second group is composed of children who presented clinical evidence of antral disease Detailed investigation was stopped when their number reached 76 making with the first group a total of 100 cases but many more cases have since been explored and in the last two years mucus or pus has been washed out of the antra of over 500 children at the hospital The sexes were equally divided, and the average age of the 76 was seven and a half the youngest being two and a half and the oldest twelve 42 were under seven Of the total 37 could be classified as cured in 35 by antral lavage at an average of between two and three washings and in 2 by intranasal antrostomy , of the remainder 26 were improved but 13 were no better though 4 of them had antrostomy

Any or all of the accessory sinuses may become diseased but the antra were chosen as the subject of this investigation because they are much the most often affected and because examination of the other sinuses is far harder in children Many interesting details about the diagnosis symptoms and results are given Mr CROOKS thinks that apart from proof puncture radiography is the most accurate means of diagnosis Nasal obstruction is frequently severe and he believes that the adenoid facies is more often the result of sinusitis than of adenoids As a cause of otitis media sinusitis is second only to adenoid infection and should always be suspected if removal of the adenoids is ineffective A child suffering from sinusitis is usually in poor health losing interest in work and play and becoming morose, ill tempered and difficult to manage On the relationship of sinusitis to infection of the tonsils and adenoids Mr CROOKS holds that broadly speaking such infection is not the common cause of sinusitis in childhood and that the removal of tonsils and adenoids neither prevents nor cures the condition He is less certain about the converse proposition and says that arguments both for and against sinusitis as a cause of infection of tonsils and adenoids can be deduced from his figures His own opinion is that sinusitis is a common cause of inflammation of the adenoids and to a lesser degree, of the tonsils

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MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY — The annual dinner of this society will be held on Thursday Jan 14th, at 7.45 P.M at the Florence Restaurant Rupert-street W when the guests of honour will be Mr Claud Mullins metropolitan police magistrate and Dr J R Rees director of the Institute of Medical Psychology

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[1] *Arch Dis. Childh* 1936 11 281

ANNOTATIONS

FOOD OF NEWCASTLE FAMILIES

Dr J A Charles, medical officer of health for Newcastle upon Tyne, is to be congratulated on a small but solid contribution to the science of nutrition made by his department in a report issued this week[1] In order to compare the diets of unemployed and employed families living in old houses or on new housing estates, the food purchased and consumed during a week by 69 families was recorded as faithfully as possible, allowance was even made for cats, dogs, and visitors, and all waste was weighed At the same time details were kept of income and expenditure Admittedly the numbers were small but in that admission lies the strength of the report The limitations of the data are fairly set out for the reader, and conclusions that are significant in a statistical sense are distinguished from the observations that are of other interest

The findings bear mainly on three questions Are the diets of the working class population adequate? What sort of job do the people make of feeding themselves on the means available? Does the higher rent of new housing estates influence nutrition? The amounts of food consumed varied widely, but the frequency distribution of diets according to calories, animal protein, and calcium content showed that more unemployed than employed fell below the range of intake within which sufficiency is held to lie The report is careful to point out that "it is not suggested that all diets below the ranges are necessarily inadequate for the families concerned but it is probable that such diets are within the danger zone in regard to the genesis of malnutrition" It also says that "it is very probable that the diets of the unemployed as a whole were inferior to those of the employed" The former bought 23 per cent more energy and protein per penny than did the latter but neither group showed "markedly excessive" purchase of expensive foods to the exclusion of equally nutritious cheaper foods These facts and the clear indication that most of the cooking, even of bread, was done at home speak well for the Newcastle housewife's ability Of course the families were not a true random sample, for selection of those who would collaborate was inevitable, but the investigators tried to make the selection representative and there is no reason to belittle the tribute As for the third question, rent was 21 per cent higher in the new housing estates than in the old houses, but it did not seem to be closely related to intake of food Another interesting finding was that the unemployed men weighed on the average 13 lb 4 oz less than the employed This difference, however, was not found among their families and the report suggests that perhaps these men lost their employment in the first instance wholly or partly because of poor physique, or that the loss of weight may have been due to wasting of muscle from lack of exercise The proportion of anæmic women was higher among the unemployed although no relation could be found between the hæmoglobin levels and the content of iron in the family diets The large families on the whole had less adequate diets and spent less money on food than the smaller families

The work described was carried out by a large team Mr A Bradford Hill D Sc of the London School of Hygiene, was responsible for the statistical aspect, Dr R A McCance and Miss Widdowson, of King's College Hospital, London, for some of the analyses, and the health department of Newcastle for the admirable report as a whole It should serve as a model for others of the same kind

CONGENITAL MULTIPLE POLYPOSIS OF THE COLON

It is fortunate that congenital multiple polyposis of the colon is a rare disease, for it places the physician or surgeon who diagnoses it in a most difficult situation The diagnosis is generally easy The patient, who is often young, usually complains of diarrhœa with or without blood in the stools, multiple adenomatous polyps, sessile or pedunculated, of any size up to 5 cm in diameter, may be felt with a finger in the rectum, seen through the sigmoidoscope, or recognised from the coarse mottling they produce in a radiogram of the colon filled with barium The condition is a precursor of malignancy, and death from carcinoma in some part of the colon or rectum often occurs in young adult life Five out of fifteen cases recently studied by McKenney[1] of Buffalo died in this way, the remainder were all between the ages of 2 and 20, and have a poor chance of surviving to middle life What treatment should be recommended to such patients? If the condition is already causing disabling symptoms, an operation involving risk may be more readily undertaken, but if the symptoms are still slight the likelihood of early death from malignancy at some uncertain date in the future has to be weighed against the risk of death as an immediate result of colectomy, for colectomy is the only means of removing potentially malignant tumours involving the whole extent of the colon It is an awkward responsibility, and becomes still more so when the patients' brothers and sisters are considered Though there has been argument as to whether the condition is strictly congenital (i e., present at birth), there is no doubt that it is hereditary and familial, and appears in early childhood McKenney's fifteen cases belong to two family groups, and several are children under 10 Should the siblings of a given patient be examined with the sigmoidoscope? On purely scientific grounds, yes, on immediate humanitarian grounds, perhaps no! Much depends on what prospect can be offered to a symptomless victim of his surviving colectomy with reasonable health McKenney suggests that the best surgical treatment is preliminary removal of all polypi from the lowest colon and rectum by fulguration, followed by resection of the rest of the colon and anastomosis of the ileum to the area denuded of polypi, which can thereafter be kept under observation for the detection of recurrence Thomas E Jones of Cleveland, discussing McKenney's paper, describes a patient so treated who was alive and well four years later Mayo and Wakefield[2] have described a modification of the same procedure, Soper[2] did something similar, using a snare instead of diathermy, with complete success 22 years ago McKenney also discusses X ray treatment, which he gave to as many as he could of his surviving patients He is satisfied that it causes both symptomatic improvement and a considerable reduction in the number of polypi More than that he is chary of claiming but even so much as that does something to make the horns of the doctor's dilemma less sharp confirmation of his findings as well as later reports of his cases would be very welcome Meanwhile where circumstances seem to contra indicate surgical treatment X ray treatment may be given with some hopefulness and it is surely justifiable to seek out unwitting subjects of the disease from among a patient's relatives and to give them at least the benefit of any good effect that radiation may have

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[1] A Study of the Diets of Sixty nine Working-class Families in Newcastle-upon Tyne Issued by the Health Department Town Hall Newcastle-upon Tyne Pp 45

[1] *J Amer med Ass* Dec 5th 1936 p 1871

[2] *Ibid*, August 1st 1936, p 34

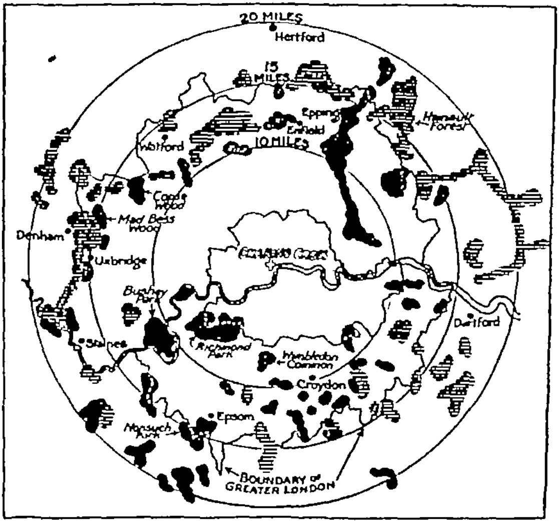
THE WORLD REQUIREMENTS OF NARCOTIC DRUGS

THE supervisory body established under the Drugs Limitation Convention of 1931 has assessed the world requirements of narcotic drugs for 1937 as follows morphine (including amounts used for conversion into other drugs such as heroin codeine and dionine) 40 976 kg against 45 978 in 1936 heroin 965 kg against 878 in 1936 codeine 25 724 kg against 30 598 in 1936; dionine 3199 kg against 3603 in 1936; and cocaine 4976 kg against 4924 in 1936 These estimates cover the requirements of 73 countries and 105 territories as well as 3 countries and 10 territories where there are customs unions or special administrative arrangements. In the case of 9 countries and 7 territories which failed to furnish figures the estimates were framed by the supervisory body The number of countries and territories failing to send in returns is, however decreasing year by year Moreover the estimates are annually approximating more nearly to the real needs Thus seventeen manufacturing countries had estimated for 1936 30½ tons of *morphine required for conversion* which was 65 per cent above the estimates for the same purpose in 1935 on representations being made by the supervisory body a reduction of 6¼ tons was effected in the morphine conversion estimates for 1937

The Permanent Central Opium Board at its last meeting with Mr Lyall (Great Britain) in the chair *called attention to certain discrepancies* between the recorded exports and imports of certain drugs Thus 73 tons of raw opium were reported as having been shipped from Iran to Straits Settlements but which appear to have been transhipped to Manchukuo whence no further information was forthcoming For the most part seizures of narcotic drugs are it is reported, becoming fewer and of less amount but this does not apply to cocaine and Indian hemp and it is suggested that addicts unable to obtain morphine and heroin are resorting to these drugs instead. While the legitimate use of heroin, according to the statistics is diminishing considerable quantities which had been seized had not been disposed of though some of it had apparently been converted into codeine

A GREEN BELT FOR LONDON

ALICE found it hard to distinguish whether Humpty Dumpty was wearing a cravat or a belt and serious people are now debating whether London is getting a belt or a cravat But no it is a belt. The time for having a cravat is long past with the days of the Restoration when Sir William Petty was imagining a circle of ground of 35 miles semi diameter round about the city from which London should get all her corn garden stuff fruits hay and timber and when John Evelyn was planning a phœnix London to rise from the ashes of the Great Fire plumed with gardens and perfumed with the scent of flowering shrubs However it was not to be London gave up wearing cravats and developed a *middle aged spread* and it is about her mature girth that the London *County Council* is putting a cincture and a handsome one too



[*By permission of the "Sunday Express"*

The scheme began in 1935 and under it the Council undertook to contribute anything up to half the approved cost of preserving land near London for open spaces but the councils of adjoining counties and boroughs were to be responsible for submitting proposals These proposals have reached the parks committee in a steady stream and 28 600 acres have already been acquired or provisionally approved for reservation The cost of preserving these lands is large and the Council has already engaged to contribute over £1 000 000 In time Londoners will have access to a belt of country which ranges from downland and wooded slopes to pasture and farmland stretching from Egham to Rickmansworth in the west towards Chipping Barnet and Epping Forest and southward from these to the north bank of the Thames near Rainham South of London the ring covers part of the North Downs in Kent and Surrey, and links up with Box Hill and Ranmore Common, finally sweeping round again towards Ankerwycke and Runnymede The belt is necessarily a broken one, or perhaps it would be fairer to call it a complete belt studded with these precious green medallions, which are now safeguarded for all time for the pleasure of Londoners The Council, with sober regard for the public purse, have tried to reserve as much land as possible at the lowest possible price, and have therefore proceeded with caution and reticence to avoid exciting the cupidity of land speculators But this is no reflection upon the owners of the areas purchased many of whom have shown great public spirit in reserving land for the green belt, as the Council gladly acknowledge

ŒSOPHAGEAL CANCER

No treatment yet devised for carcinoma of the œsophagus has proved effective, in fact the cases cured by any method are so few that they may be looked on as famous exceptions to the rule that this disease is at present incurable In such circumstances all new claims and reasonable proposals must be carefully considered. Especially welcome would be a form of treatment that would not tax the strength and endurance of an elderly patient much enfeebled by a wasting disease, and it is interesting to find Dr Ffrangcon Roberts[1] reporting tolerably good results from the use of deep X rays He begins his paper with a graphic description of the state of "withering undelight" of the wretched patient, goes on briefly to dismiss the alternative methods of treatment, and then describes his technique and the results obtained His plan is to irradiate the growth over a succession of strip fields, the rays being accurately directed from different angles so that the growth itself receives a maximum, and the surrounding tissues, especially the skin, a minimum dose He uses a large number of very narrow fields, thereby further concentrating the radiation on the growth Treatment is given on consecutive days, 3 fields a day and as many as 26 fields may be used in one patient The applicator is accurately centred and checked each time by means of an ingenious device whereby a tracing is made of the horizontal contour of the chest and the position of growth, and it is from this tracing that each position is precisely determined It is a pity that the results are recorded rather vaguely, there are no figures except in five illustrative cases Moreover, Dr Roberts excludes "advanced and debilitated cases" which seems hardly justifiable when a method is being considered which requires comparatively little endurance in the patient However, he is able to show one three year cure, and one patient alive and well fifteen months after the onset of symptoms, and it is to be hoped that the technique can yet be improved It may be noted here that Chevalier Jackson[2] considers X ray therapy, with or without gastrostomy, one of the best methods of treatment for œsophageal carcinoma and though radium has on the whole given disappointing results it is possible as Mailer suggests,[3] that a combination of radium and X ray treatment offers the best hope The most promising experience with radium is that of Guisez[4] but others have been less fortunate with it and most of the "cures" so far on record are those of radical surgery Torek's patient was alive and well twelve years after operation, and success has been achieved by a number of others including Eggers, Grey Turner, Kirschner, Ohsawa, and Abel In our present issue Mr Pilcher discusses radical excision of carcinoma of the cervical œsophagus, and describes a case of Trotter's which was free from recurrence ten years after operation, and in which the function of swallowing had been restored by plastic operation Such cases hold out hope for the future but until big advances have been made less heroic measures will still have an important place in the treatment of œsophageal carcinoma

THOUGHTS ON THE ADDENDUM

An ancient writer, commenting on the prescription of medicines with many ingredients, insinuated that its object was *pour faire valoir le metier* or *ad ostentationem artis* William Wadd, surgeon extraordinary to George II, in whose quaint memoirs this gibe is recalled, reflects that Bacon was perhaps nearer the truth when he said that the multiplicity of remedies was the child of ignorance—a thought that has often been expressed since though not always so happily Be that as it may, with the progress of science medicines have become more simple, and evidence of the trend will be found in the Addendum 1936 to the British Pharmacopœia 1932 It is not really very long since strychnine hydrochloride began to take the place of galenical preparations of nux vomica, and the alkaloids of opium began to be preferred to the tincture Sometimes it may be the whole drug is better than the active principle, but from the standpoint of the compilers of pharmacopœias the latter is certainly preferable, since a crystalline chemical product is capable of accurate standardisation The task of chemist and doctor alike grow easier when the abstract conception, vitamin C, comes down to earth as ascorbic acid or acidum ascorbicum

The Addendum has already been reviewed in The Lancet, but these second thoughts on the subject are prompted by the fact that since the beginning of the year its monographs have had the same authority as that of the B P itself

PREGNANCY ANÆMIA AND SOCIAL CIRCUMSTANCES

In the last few years increasing attention has been paid to the part played by poverty in the anæmia of pregnancy It was formerly thought that the anæmia arose from the demands of the fœtus for iron and other hæmopoietic principles, but recently as we noted not long ago,[1] Bethell[2] in the United States and Fullerton[3] in this country have suggested that pregnancy in itself is not a cause of it The iron saved by the cessation of menstruation, they calculate, makes up for the iron lost to the fœtus, though excessive hæmorrhage at delivery may of course be serious later, especially in women whose diet is deficient in minerals The high incidence of anæmia during pregnancy they attribute to causes not directly associated with the requirements of the fœtus

In an important study of pregnant women in Stockport, published in our last issue, Dr W J S Reid and Dr Jean Mackintosh bring forward additional data Among over 1100 women examined they found no case of hyperchromic anæmia, but

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[1] *Brit J Radiol* November 1936 p 732

[2] Bronchoscopy Esophagoscopy and Bronchoscopy London 3rd ed 1934

[3] *Lancet* 1935 2 1052

[4] Quoted by A L Abel Œsophageal Obstruction London 1929

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[1] *Lancet* 1936 2 801

[2] Bethell F H (1936) *J Amer med Ass* 107 564

[3] Fullerton H W (1936) *Brit med J* 2 523 577

about 10 per cent had a hæmoglobin level below 70 per cent —a figure slightly lower than that given by J A Boycott for London and considerably lower than that found in a rather similar study in Aberdeen. In order to determine the effects of economic circumstance Reid and Mackintosh divided their patients into two groups according to the average income per head of the family after deduction of rent Group I contained women with an average income of 12*s* per head or less and Group II those with an income of over 12*s* a head (For this purpose the pregnant woman was counted as two) Of Group I 13 2 per cent had a hæmoglobin level of below 70 per cent a figure in closer agreement with the Aberdeen observations while of the higher income group *only 5 per cent had a low hæmoglobin* Multiparity even in good social circumstances began to have a definite effect on the incidence of anæmia when the women had had five or more pregnancies and in poor circumstances it affected hæmoglobin earlier in the childbearing career Only 7 6 per cent of primiparæ in Group I had anæmia but 15 4 per cent of multiparæ had a hæmoglobin below 70 per cent This is partly no doubt because when economic circumstances are bad it is almost always the mother who goes without Age apart from parity bore no relation to anæmia Women who worked outside the home during pregnancy decreased their liability to develop anæmia because they increased the family income

These observations show that undoubtedly pregnancy has an indirect effect in causing anæmia in women whose diet is inadequate The prevention of such anæmia in women and consequently in infants since its cause is recognised must be considered one of the major problems before any civilised community

DEVELOPMENTS AT LEEDS

SINCE the General Infirmary at Leeds was opened in the year 1869 extensions—and some of them very great ones—have been found necessary to meet the ever increasing demands made upon the institution. Sometimes it has even been thought that finality had been reached but this has always been found to be fallacious It has for long been felt that there ought to be in connexion with the Infirmary a paying department for the accommodation of those who are not in a position to meet the expense of the best nursing homes and yet are not of the recognised hospital class Greatly increased accommodation for the nursing staff which now numbers about 300 with an adequate recreation room and with better *provision for* the use of the *preliminary* school of instruction a new out patient department improved *accommodation for the X ray diagnostic department* and some structural alterations all appeared to be so important that in the year 1933 it was decided to make an appeal for the sum of £250 000 It is a matter for congratulation that on the last day of the year which has just closed it was announced that this sum had been reached During the three years since the appeal was launched much thought has been given to the plans in the case of the more urgent requirements the work has been going on and in some it has approached completion Not included in the £250 000 just mentioned there has come from Claire Lady Manton and her sons a welcome gift of £8000 for new buildings for the X ray diagnostic department which will enable the work to start at once Lord Manton took a deep interest in the work of the Infirmary and was on the Board for some sixteen years Along with Mr Charles Lupton he did much to improve the conditions of service for the nursing staff and when he made a generous donation of £50 000 to the funds of the Infirmary he stipulated that £10 000 should go to the nurses pension fund

A MINISTRY OF CHILDHOOD?

IT has long been recognised by teachers and parents that the human child if not a separate species is *pretty* well *a distinct variety* of *Homo sapiens* Mr Edward Fuller would have the Government recognise this fact and create a Department or Ministry of Childhood taking as its province all the needs of the child as specified in the Declaration of Geneva. Uruguay he tells us has such a ministry and Peru is about to create one while in this country the liaison between the Ministry of Health and the medical department of the Board of Education establishes what is virtually a national service for the supervision of the health of children from birth or before to school or after For fourteen years past the U S A. has had its Federal Children s Bureau dealing with every department of child welfare except education but Mr Fuller said that not many years ago in answer to an inquiry he received from one of the constituent States the reply We do not know what is meant by child welfare Speaking at the same conference which was arranged by the Nursery Schools Association Prof Olive Wheeler expressed her dissatisfaction at the over-emphasis of the legal aspect of delinquency by the Home Office behaviour that seems to her perfectly normal for the period of childhood—such acts as letting off fireworks in the street or riding bicycles without a light—are regarded by chief constables as offences leading to the taking of fingerprint impressions She would like the Board of Education to take on *more and more responsibility for the legal*, labour and health aspects of child life Both Dr G F McCleary and Dr Ralph Crowley were drawn into the discussion and Dr McCleary suggested the need for a million places in the nursery schools against the six thousand or so provided in the existing 78 schools His feeling was that if people wanted these schools enough they would see that they got them Dr Crowley was sympathetic to the idea of having a department at the centre always thinking of the whole child There were certainly enough ideas presented at the conference to keep the Nursery Schools Association going for another year

RECTAL ADMINISTRATION OF EVIPAN

HAVING found that rabbits and dogs readily absorb Evipan from the rectum in 10 per cent solution and are satisfactorily anæsthetised thereby Gwathmey[1] proceeded to use rectal evipan in his practice His object was to secure a perfect state of pre-anæsthetic unconsciousness on which true anæsthesia could be imposed with nitrous oxide ethylene and so on it was not intended that the evipan should be unaided a sufficient anæsthetic and in fact it sufficed by itself only for short and slight operations In the laboratory 50 mg per kg of body weight produced anæsthesia in animals five times out of six, unconsciousness lasting about an hour and a quarter The highest dose used 175 mg per kg, gave an anæsthesia lasting seventeen hours Dogs showed a wider margin of safety when evipan was given by rectal injection than when it was introduced by the vein The therapeutic index—that is the minimum [illegible] that dose divided by the minimal anæsthetic dose—was 4 rectally as against 3 3 intravenously At the time of his report Gwathmey's experience with human beings was limited to some 150 cases, but as far as it went it was very satisfactory Anæsthesia came on comfortably in about five minutes and there were no unpleasant consequences of the injection, either in the rectum or elsewhere A fairly large proportion of the patients during recovery showed the restlessness often seen after the action of a barbiturate, but pulse, respiration, and blood pressure remained normal unless upset by the surgeon The average dosage used was 0 2 c cm of an aqueous solution per pound of body weight (44 mg per kg), but physique, habits, and disposition of the patient were taken into consideration when determining the amount to be injected To the 10 per cent solution was added a quarter of a grain of morphia, but Gwathmey found that when Dilaudid was substituted for morphia there was much less nausea and vomiting after operation The use of other barbiturates in association with evipan he regards as inadvisable A further claim by Gwathmey is that rectal evipan brings freedom from pulmonary complications, but this is based on results with animals and appears unconvincing Moreover, as was pointed out by Dawkins in his treatise which we reviewed last week (p 35), the principal objection to premedication is its tendency to encourage lung trouble after operation unless it is managed with great care The technique of injection described by Gwathmey is laudably simple and the injection is given an hour before the time fixed for operation We are not aware of the rectal use of evipan hitherto in this country, but doubtless some will now be led to try it

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[1] Gwathmey J T (1936) Amer J Surg 33 411

ROUGH WEATHER IN BATTERSEA

UNDER the name of the Antivivisection Hospital, the Battersea Hospital was founded in 1902 as "a visible protest against the demoralising practice of performing any experiments on animals" A time came when the protest proved less and less emphatic, for want of funds, and eventually it was necessary to ask help from King Edward's Hospital Fund This help was not forthcoming so long as the institution maintained its original principles—principles that "somehow contrived to encourage moral condemnation of medical and surgical treatment elsewhere"[1] In this emergency Mr S E Parkes joined the board, provided financial guarantees, and became chairman An application was lodged with the Chancery Division for leave to eliminate the element of antivivisection from the name and objects of the Hospital and after the honorary medical superintendent Mr J R Lee, F R C S, had testified that the progress of science and advance in knowledge made it nowadays impossible to run a general hospital on antivivisection principles the Court accepted the plea and the Battersea General Hospital started on a new lease of life King Edward's Fund made a grant and money was collected, but the question then arose whether the Hospital should not fall into line with others of its kind in its manner of making staff appointments, none of which had so far been the result of open competition In December, 1935 the members of the staff were invited (and all except two agreed) to sign a statement that their posts were terminable by the Hospital at the end of each year, and last autumn notice was given that all of them would in fact be terminated at the end of 1936 and advertised in the medical press—though in making new appointments preference would be given, other things being equal, to the former holders Mr Parkes asked the help of the British Medical Association, and a selection committee, including the dean and the professors of medicine and surgery at the British Postgraduate Medical School, was set up to consider the applications. Nearly all the former staff applied for reappointment, but many of the places were filled by candidates from outside Some of those who failed to secure reappointment held that they had been unfairly treated and have accordingly applied for, and obtained, an injunction restraining the Hospital from their dismissal before their case can be heard They may argue perhaps that they signed the statement about annual tenure on the assumption that it would apply, as at other hospitals, only in exceptional circumstances, they may say that reasonable security is essential for the honorary hospital officer Meanwhile a crisis has arisen over the position of Mr Lee, the senior surgeon, who was not reappointed —but (we understand) took no legal action Mr Lee is approaching the age of retirement under the new regulations, and the selection committee may have preferred to bring in a younger man, but he has done fine work in steering a course towards a new and better state of things, and when it came to the point last week the hospital board could not bring themselves to drop the pilot Mr Parkes, whose services as chairman of the board have also been invaluable in the past year or two, unfortunately felt bound to regard this as a vote of no confidence in himself, for he held that the views of the selection committee must be accepted or rejected as a whole. So he resigned, and two other members of the board with him This is clearly regrettable, and it is to be hoped that a way will yet be found to resolve the conflict of loyalties

WE regret to announce the death on Sunday last in a London nursing home of Dr D F Fraser Harris in his seventieth year Quite early in his career he took the Neil Arnott prize in physiological physics which remained a major interest to him throughout his life After taking very high qualifications in science as well as in medicine, he taught physiology at Glasgow and acted as professor of physiology at St Andrews until he was called in 1911 to the chair of physiology at Dalhousie, Nova Scotia, where he remained until 1924 He had a gift for clear and graphic exposition and his popular books on physiology have had a wide circulation.

THE SPANISH MEDICAL AID COMMITTEE—This Committee has presented to the Spanish Government the hospital that the British Medical Aid Unit established at Grañen (see Mr Sinclair Loutit's letter published in our issue of Nov 28th), and members of the medical staff have gone to Albacete to work with the International Brigade there The hospital at Grañen is now being run by the Spanish authorities but at their special request the British nurses are staying on The standard of nursing in Spain is low and the Spaniards have been much impressed by the skill and efficiency of the English nurses. Doctors nurses, and drivers sent out by the Spanish Medical Aid Committee will in future go to the International Brigade at Albacete Last week the Committee sent out a Talbot ambulance, similar to those used by the London County Council and two more will go during the next week or so together with a lorry full of medical and surgical supplies A special decontamination van is also being dispatched to Madrid to deal with people who have been affected by mustard gas

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[1] *Lancet* 1935, 2, 1245

PRINCIPLES OF MEDICAL STATISTICS

II.—SELECTION

IN medical statistics we are nearly always working with samples drawn from large populations. For instance, if we compare the mortality of diabetics treated with insulin with diabetics not treated with insulin we do not possess information regarding all such persons (whom we may term the "universe" of diabetics) but only for a sample of each type which has come under our own observation or under the observation of others. If we wish to argue from this sample to the universe from which it was drawn, to deduce that what is true of our sample of patients is therefore true of the general run of patients, then we must consider very carefully whether in fact our sample is fully representative of all patients and not in any way biased or "selected." It is important to be clear on the meaning the statistician attaches to the word selected. By a selected sample he denotes a sample which is not representative of the universe from which it is drawn. The selection may have been deliberate, in which case the form of selection is known and the lack of comparability between the sample and the universe is usually perfectly clear. For instance, if the treatment of respiratory tuberculosis by means of artificial pneumothorax is confined in a sanatorium to patients with signs of disease in one lung only then it is obvious that these patients are *not* a representative sample of all patients with phthisis but are selected on the criterion of one lung only affected. To compare their mortality experience with *that of all patients is therefore* a very doubtful procedure, for we are clearly not comparing like with like in all respects except artificial pneumothorax treatment. Even without that treatment the death-rate of patients with only one lung affected may differ materially from the death-rate of the general run of patients.

More often, however, the "selection" is not deliberate but is quite unforeseen or is unrealised. To say, therefore, that Mr. So-and-So's figures relate to a selected sample of patients is not an aspersion on Mr. So-and-So's scientific honesty; the statement implies only that owing to the method of collection of the figures or to the limited field in which Mr. So-and-So was able to operate it is quite impossible for his sample to be representative. It may be that with care that selection might have been avoided; often it is unavoidable. Its possible presence cannot be too carefully remembered or taken into account in interpreting statistics. As, however, it is frequently overlooked a series of examples will not be amiss.

Examples of Selection

I

As a simple illustration I have taken from the *Times* the frequency with which male and female births are recorded in the birth column. In 1935 the number of male births was 3304 and female births 3034, so that the sex ratio is 1089 males for each 1000 females. According to the Registrar-General's figures for England and Wales the sex ratio of births in the country as a whole rarely exceeds 1050. It is clear that from the point of view of sex ratio the births recorded in the *Times* are not representative of the births in the country as a whole. It is possible that first births are more frequently recorded *in those columns than births of a later order* and that such births have a different sex ratio; or that proud parents are more likely to record their heirs than their daughters; or that the sex ratio differs between social classes. With such a sample of births, if that was all that was available, one could not generalise about the universe with any security.

II

Hospital statistics can very rarely be regarded as unselected. The patients are frequently drawn from particular areas and largely from particular social classes. Still more important, in many diseases only those patients who are seriously ill are likely to be taken to hospital. It is obvious that we cannot determine with any approach to accuracy the fatality-rate of any disease, say measles at ages 0–5 years, if our statistics are based only upon the seriously ill—perhaps only upon patients in whom a secondary pneumonia has developed—and ignore the mass of children whose symptoms are so slight that they can safely be treated in their own homes. Of *all* children with measles those in hospital will often form only a small and stringently selected group; our deductions from such a group are correspondingly limited, especially with regard to such factors as the incidence of complications and the rate of fatality or recovery. It is not too much to say that there is no disease in which a hospital population must not initially be regarded with suspicion if it is desired to argue from the sample to the universe of all patients. No such argument should be attempted without a preliminary *and rigorous examination of the possible ways in* which selection may have occurred.

The same difficulty arises with secular comparisons—e.g., when we wish to see whether the fatality from some disease has changed from one year to another. In each year the fatality-rate is measured upon the patients admitted to hospital and in each year those patients are a sample of all patients with the disease in question. It must be considered whether that sample has changed in type. In both years the sample may be a selected sample but the selection may not be identical. The kind of patient admitted may have changed. For example, in a group of American hospitals it has been reported that the fatality-rate from appendicitis declined from 6 per cent. in 1928 to 3.5 per cent. in 1932. Is that a "real" decline or has there been a concurrent change in the types of patients admitted? Examination of the basic figures shows that in these hospitals in 1928 some 2500 patients were operated upon while in 1932 the number had risen to 3500, an increase of 40 per cent. It is impossible to believe that an increase of 40 per cent. in five years is a real increase in the incidence of appendicitis. It is more likely that the desire for admission to these hospitals or the criteria of admission have changed; that some patients who were admitted in 1932 would not have entered them in 1928. It is possible therefore that the type of entry has changed as well as the volume—perhaps that milder cases were admitted and operated upon in 1932 which were not present in the 1928 series. In the absence of positive evidence on that point the change in fatality cannot be accepted at its face value or as satisfactory evidence of the effect of a change in some other factor—e.g., the benefit of earlier admission to hospital in 1932 than in 1928. The following two questions must always be considered. Has there been a change in the population from which the samples are drawn at two dates—i.e., a change relevant to the question at issue? At each date was there an equal probability that a particular type of patient would be included in the sample?

III

In measurements of the value of some form of treatment, statistics of the following type are frequently given —

Day of disease upon which treatment was first given	Fatality rate per cent of treated patients	Day of disease upon which treatment was first given	Fatality rate per cent of treated patients
1	1 3	4	9 3
2	3 6	5	12 8
3	7 5	6 or later	16 4

It is possible that the level of this fatality rate at the different stages is seriously influenced by selection Let us suppose, as is often the case, that the treatment is given to patients brought to hospital and that *all* patients do not necessarily go to hospital Then on the first day of disease a variety of patients will be taken to hospital, in some of whom, in the absence of the special treatment, the disease is destined to run a mild course, in others a severe course The presence of a proportion of mild cases will ensure a relatively low fatality rate, even if the special treatment has no specific effect But as time passes this proportion of mild cases in the hospital sample is likely to decline By the time, say, the fourth day of disease is reached a number of patients who were not seriously ill will have recovered or be on the way to recovery Their removal to hospital is unnecessary On the other hand, patients who have made a turn for the worse or whose condition has become serious are likely to be taken to hospital for immediate treatment Thus on the later days of disease the sample removed to hospital for treatment is likely to contain an increasing proportion of persons seriously ill it obviously being unnecessary to transfer those who are making an uninterrupted recovery In other words the patients removed to hospital on the fourth day of disease are not a random sample of all patients who have reached that day of the disease but consist rather, perhaps mainly, of patients still seriously ill Such a group will certainly have a relatively high fatality rate

Another example of this statistical difficulty may be taken from some fatality rates recorded for appendicitis It has been reported that in a group of cases 2 per cent died of those admitted to hospital within 24 hours of the onset of symptoms compared with 10 per cent of those whose admission was delayed till after 72 hours But it is likely that the group of patients admitted early is composed of a proportion of the seriously ill and a proportion that would do well whether admitted to hospital or not On the other hand those who are admitted after a delay of three days from onset are likely to be patients whose condition is serious, and clearly those whose condition has become quiescent are unlikely to be taken to hospital at that point of time If such a sequence of events occurs, it is clear that the group of patients admitted early is not in pari materia with the group of patients admitted late Selection may not be the whole explanation of the difference between the fatality rates, indeed it is not likely to be for there are excellent reasons for the early treatment of appendicitis But it is a possible factor with statistics such as these which makes it very difficult to measure accurately the *magnitude* of the advantage

IV

A sample which is composed of volunteers or self selected individuals is not likely to be a random sample of the universe from which it is drawn. If, for example, the treatment of colds by vaccine is offered to a group of persons, the volunteers are likely to belong mainly to that section of the group which suffers most severely from colds and hopes for some advantage from the treatment They are in that event a select group, not comparable with the remainder of the population from which they were drawn In such cases the question must always arise is the act of volunteering correlated with any factor which may have an influence upon the final results of the experiment?

Self-selection

An interesting example of what may be termed self selection is worth quoting In 1931 the Industrial Pulmonary Diseases Committee of the Medical Research Council wished to make an inquiry into whether the working health and capacity of coal miners are impaired by the inhalation of anthracite dust To begin with, a study was made of the size and age constitution of the working population at the South Wales anthracite collieries Underground workers had to be excluded from the investigation, since such workers as well as being exposed to various concentrations of anthracite dust in the atmosphere may in addition be exposed at times to silica dust. If the health of these workers was found to be impaired it would be impossible to implicate anthracite dust as the responsible agent The impairment might equally well be due to exposure to stone dust containing silica, which, it is well known, can produce serious damage to health In addition it was considered necessary to exclude surface workers who had at any time worked underground, since the effects of exposure to silica dust will not necessarily be immediately apparent and also because impaired health may have been the reason for transference from underground to surface work This was, in fact, known to be the reason in numerous cases, so that such workers would be a highly select group Attention was therefore turned to workers who were exposed to anthracite dust on the surface and had *always* worked on the surface Such workers, it was found, are employed on a relatively light task Not only was there a tendency to draft to it operatives who had previously worked underground and had for one reason or another become partially incapacitated but in addition it was clear that a large number of boys were initially employed upon this work but rapidly moved away to other work In the main these boys were drafted underground where the physical labour was heavier but the rate of pay superior

The inevitable inference is that the healthy and strong individuals will transfer to underground work while those who remain on the surface are likely to be of under average physique and health In other words there has been a form of self selection If the examination of such surface workers showed that they included a high proportion with impaired health or that they suffered an unduly high rate of sickness in comparison with some standard, this result could not with security be ascribed to the effects of dust inhalation It might be considerably influenced by the fact that these surface workers were, through the operation of selection, initially less healthy than a random sample of all surface workers This investigation also contains an example of selection through volunteers being accepted for examination For the reasons outlined above no inquiry was made at the collieries and the field of study was transferred to dock workers exposed to anthracite dust Of 250 such workers it was arranged to examine clinically and radiologically a sample of 40 operatives—namely 15 workers employed for only 3–4 years and 25 older workers with 15–40 years service. These two groups were selected at random from the complete list of operatives, to ensure as far as possible with such small numbers a representative sample At the examination eleven of these men were absent and to make good the deficiency in numbers volunteers were secured in place of the absentees

The results of the examinations suggested that there was a readiness to volunteer on the part of individuals who on account of some known or suspected disability desired to be medically examined Such substitutions may therefore result in the sample ceasing to be random and representative of the population from which it was drawn

Questionnaires

Inquiries carried out by means of questionnaires are par excellence those in which selection must be suspected In all such inquiries replies to the questions put—even to the simplest question—are received from only a proportion of the individuals to whom the form is sent There can never be the slightest certainty that the individuals who choose to reply are a representative sample of all the individuals approached indeed very often it is extremely unlikely that they are representative For example one *may take the inquiry made by the Editor of* THE LANCET into the Present-day Openings of Medical Practice (*Lancet* 1935 2 512) To measure the success with which recent graduates had been attended in their profession a questionnaire of three relatively simple questions was addressed to the 1490 men and women who in 1030 registered their names with the General Medical Council viz (1) What branch of medicine have you taken up ? (2) What led you to this choice ? and (3) What was your approximate income from professional work last year ? To overcome objections to providing such personal information no clue to the identity of the correspondent was required Of the individuals approached 44 per cent replied Are these persons a representative sample of the 1490 ? It is possible as is clearly pointed out in the report that there might be a tendency for those who have been successful in their profession to be more eager to register their success than for those who have failed to register their failure Alternatively the latter might under the veil of secrecy be glad of the opportunity of stating frankly the drawbacks of the profession Those who have turned to other professions might tend not to reply under the impression that the inquiry cannot concern them Successful and busy individuals might be unwilling to give time to the inquiry *It is impossible to determine whether any* such factors are operative in the determination to answer or not to answer The difficulty is inherent in all inquiries carried out by this method

House Sampling

An interesting example of selection in taking a random sample of houses is suggested in the Ministry of Health's report on the influenza pandemic of 1918 (Reports on Public Health and Medical Subjects No 4) To obtain facts as to the incidence and fatality from influenza in 1918–19 a house to house inquiry was undertaken in five areas of Leicester information being obtained *so far as possible* at every fifth house Houses which were found closed at the time of visit had to be ignored in this census But houses in which there are young children are rarely found closed and this would tend to affect the age distribution of the population recorded in the sample Compared with the population from which it was drawn the sample would be likely to contain an undue proportion of young children and a deficit in the number of adults Any substitution of another house for the original randomly chosen one would be likely to add still further bias to the sample and such substitutions are to be avoided in sampling inquiries

It will be noted that a selection of this type would be difficult to foresee It is here that the statistician has some advantage for his experience of such inquiries makes him familiar with the methods that are likely to ensure a random sample and those that are likely to lead to one that is unrepresentative of the population from which it is taken Workers who are unfamiliar with sampling inquiries but wish to embark upon one may therefore find his advice of assistance

Summary

In statistics we are working nearly always with relatively small samples drawn from large populations to be in a position to generalise the sample *must be representative of the population to which* it belongs In taking samples selection may occur through the operation of various factors A selected sample is one which is not representative of the universe whether the bias be due to deliberate choice or unconscious selection of the members incorporated in the sample In generalising from a sample or in making comparisons between one sample and another the possible presence of selection must always be very closely considered

A B H

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED *DEC 20TH 1030*

Notifications—The following cases of infectious disease were notified during the week: Small pox, 0 scarlet fever 1036; diphtheria, 1013; enteric fever 21; pneumonia (primary or influenzal) 832 puerperal fever 22 puerperal pyrexia 72; cerebro-spinal fever 10 acute poliomyelitis, 3 encephalitis lethargica 4 dysentery 10 ophthalmia neonatorum 40 No case of cholera plague or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Jan 1 1937 was 3151 which included: Scarlet fever 999; diphtheria 1060; *measles* 10 whooping-cough 1 7 puerperal fever 14 mothers (plus 9 babies) encephalitis lethargica 255 poliomyelitis 4 At St Margaret's Hospital there were 12 babies (plus 5 mothers) with ophthalmia neonatorum

Deaths—In 122 great towns including London, there was no death from small pox 2 (0) from enteric fever 1 (0) from measles, 2 (0) from scarlet fever 11 (1) from whooping-cough 10 (7) from diphtheria 33 (8) from diarrhoea and enteritis under two years and 0[illegible] (2[illegible]) from influenza The figures in parentheses are those for London itself

Sheffield and Stockton-on-Tees each reported a death from enteric fever Thurrock [illegible] death from whooping-cough Fatal cases of diphtheria were reported from 15 great towns Liverpool 6 Thurrock 4 Bradford and Manchester each 3

The number of stillbirths notified during the week was [illegible]20 (corresponding to a rate of 40 per 10[illegible] total births) including [illegible]3 in London.

SPECIAL ARTICLES

MODERN VIEWS ON INFECTION AND DISINFECTION *

BY SIR WELDON DALRYMPLE CHAMPNEYS, Bt.,
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A GENERAL overhaul of our methods of preventing and treating infectious diseases in the light of modern knowledge is long overdue, and reform in this sphere—as ultimately in every sphere of public health work—depends upon the existence of an enlightened public opinion. On no subject perhaps has thinking been looser and generalisation more irresponsible than on that of infectious diseases, and the time has come when clear thought and scientific assessment are essential if we are to make full use of the mass of valuable knowledge accumulated by research workers in recent years. I must content myself with calling your attention to certain selected aspects.

Infection

THE NATURE OF INFECTIOUS DISEASE

We are apt, I think, to picture the life of man as an originally idyllic existence, which at some very remote period and for some very obscure reason (associated perhaps with apples) was suddenly interrupted by the invasion of some ill-natured creatures called microbes which had the nasty habit of causing disease in their host man. But if we consider the matter for a moment it is plain that the pathogenic or disease-producing micro-organisms are some of the simplest and therefore most primitive living things upon this earth and must, though doubtless in a slightly different guise, have been in existence long before man appeared upon the earth. Whether these organisms took to a life of crime before or after man had evolved as a separate genus is really an academic question, and we can be sure that, speaking generally, the fight between man and his parasites (for all disease germs can be so described) has been going on throughout man's history. Microbial disease—to use an old but convenient term—can in fact be defined as a disturbance of health in man or other living things due to the presence of parasitic organisms, or in other words as a disturbance of the equilibrium between host and parasite unfavourable to the host. Bordet (1920) has expressed this with the neatness so characteristic of his race: "La vie est le maintien d'un équilibre incessamment menacé." Every addition to our knowledge of infection and immunity serves to emphasise the incessant nature of this menace and there can be no doubt that, as Andrewes pointed out, the constant struggle of man against disease must have played a most important, though much neglected, rôle in our evolution. "Of all the teeth in the terrible comb with which Nature sorts out the inefficient," he writes, "disease is one of the most formidable."

In order that the host should survive these incessant attacks he must of course become adapted in some way to the parasite—just as the parasite to survive the attacks of the host's defensive mechanisms must also become adapted—and to watch the parasite's attacks persistent but never carried so far as to exterminate the host species, which would involve its own extinction, is to be reminded inevitably of a cunning blackmailer at work.

Of the many different micro-organisms which may be found in the human body not all are harmful and some are even useful to us. Moreover it is important to remember that the discovery in the body of a micro-organism capable of causing a disease does not necessarily mean that the patient is suffering from the disease in question or even that they have been recently infected. We all of us, in fact, like the great nobles of past centuries, support a large number of dependants of whose presence we are hardly if at all aware. I shall refer again to this curious phenomenon, the importance of which is only beginning to be realised, when dealing with so-called "carriers," but I must refer for a moment to the difficulties attending the definition of "infection."

It is obviously confusing to use the same word to express the successful attempt of a pathogenic micro-organism to penetrate the first line of defence and establish itself in the body of its host, and also the further success by which it produces a definite disturbance of health or a disease. In my opinion no completely satisfactory solution of this difficulty has been found, but the terms "infection" for the initial success and "invasion" for the further one are widely used and have a certain amount to recommend them.

THE REACTIONS OF THE HOST TO THE PARASITE OR ITS PRODUCTS

The reactions of any host to the presence of a pathogenic organism are numerous and complex, and although our knowledge of these reactions has been greatly extended in recent years it seems probable that we have so far explored only the fringes of this mysterious territory. I shall therefore make no attempt to give a complete account of these reactions but will merely mention those which seem to be the most important. Naturally these reactions are not mutually exclusive and several often occur successively or simultaneously in the same host (see Diagram).

1. The parasite may be killed immediately by the defensive mechanisms, specific and non-specific, of the host's body, without the manifestation of any signs or symptoms of disease.

2. The parasite may give rise to the local reaction known as inflammation, which may or may not be accompanied by—

3. Pus formation, pus consisting mostly of the dead bodies of the white blood corpuscles killed by the parasite whilst defending the host.

4. The parts immediately surrounding the site of infection may die—i.e., local necrosis may occur.

5. Fever may result. This is a protective reaction of the host as the raising of the body temperature increases, in some way at present little understood, the efficiency of some or all of the body's defensive mechanisms. Artificial fever has been used for many years in the cure of microbial disease, having been usually produced by means of so-called "protein shock" (by the injection of milk, a vaccine made from the causative organisms of a different disease, &c.), but recently the production of artificial fever by the actual mechanical heating of the whole body to a high temperature for a short time has been tried, apparently with considerable success.

6. The body of the host may respond to the stimulus of the parasite's presence by the formation of substances known as "antibodies." These antibodies are of many different kinds, new varieties being constantly discovered

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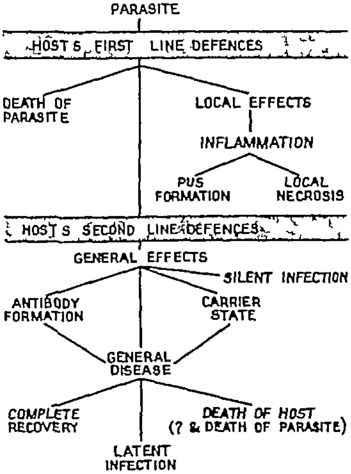
* The substance of a Chadwick lecture delivered on Dec. 9th.

and probably many are still unknown, but those which are produced as a reaction to the presence of a parasite (or more accurately speaking to the presence of a specific substance or "antigen" liberated by the parasite during its life or after its death) are specially adapted to destroy precipitate or otherwise put out of action the parasite in question.

7 The parasite may succeed in producing a disturbance of health or disease in the host with or without fever and this disease may terminate in one of three ways (*a*) complete recovery with destruction of the invading parasite (*b*) apparent recovery but with survival of the invader (*c*) death of the host—and nearly always of the *parasite too*

8 The parasite may establish itself in the body of the host without causing any disturbance of his health but there is always or nearly always some reaction to the parasite's presence such as antibody formation, though such a reaction may be difficult to detect in these so-called "silent infections" Silent infections result in the host acquiring immunity to the particular parasite as in tuberculosis diphtheria, scarlet fever &c This immunity can sometimes be demonstrated by a skin test depending on the sensitivity to a toxin or poison of the particular parasite acquired by the skin as the result of a previous infection

9 A carrier state may be established in connexion with either of the last two reactions to which I have referred, that is to say either as the result of a definite illness followed by apparent recovery without complete destruction of the invading parasite or in consequence of a silent infection. I shall refer later to the importance of this carrier state in the spread and treatment of infectious diseases. It consists essentially in the presence of a parasite capable of causing disease without the actual occurrence of such disease



Before leaving this question of the reaction of the host to the parasite I would call attention to the fact that a disease (and I am here referring to an infectious disease) is not to be conceived of as the reaction of a host to the invasion of one particular parasite but as a frequently recurring and well-defined complex of signs and symptoms which may be produced by the attack of one or more of a number of quite different micro-organisms as is the case in pneumonia dysentery meningitis enteric fever &c

CHANNELS OF INFECTION

Infecting parasites may enter the body through a number of different portals, but I propose to consider only the two commonest—viz., the skin and the nose and mouth

Through the skin.—Invasion may result either in a local injury or lesion (with or without constitutional disturbance) or in generalised disease without local manifestations. Examples of local lesions caused by infecting micro-organisms are boils due to the staphylococcus and malignant pustule due to the *Bacillus anthracis* Infections through the skin resulting in general disease are syphilis due to the *Treponema pallidum* bubonic plague due to the *Bacterium pestis* transmitted by the flea leprosy due to the *Bacillus lepræ* undulant fever due to one of the organisms of the brucella group malaria due to sporozoa transmitted by the mosquito yellow fever due to a virus transmitted by another mosquito typhus due to a virus transmitted by the body louse sleeping sickness due to a trypanosome transmitted by the tsetse fly and Rocky Mountain spotted fever due to a rickettsia transmitted by a tick

Through the nose and mouth.—There are two main ways in which infection may enter—i e either by the inhalation of infected droplets in the breath of patients or carriers, or by swallowing infected food or drink Examples of droplet infections are measles whooping-cough influenza the common cold cerebrospinal (spotted) fever pneumonic plague scarlet fever infectious sore throat or tonsillitis pulmonary tuberculosis diphtheria small pox chicken pox mumps and German measles Examples of disease caused by micro-organisms contained in food or drink are bone and joint tuberculosis due to the bovine tubercle bacillus often present in milk cholera typhoid and paratyphoid fever undulant fever due to milk infected with the *Brucella abortus* which causes contagious abortion in cattle and infantile diarrhœa I may call attention in passing to the rôle played by flies in the transmission of some diseases in this group clean food often being contaminated by these insects settling upon it after visits elsewhere

Changed Views on Infection

Let us now consider in what respects the knowledge accumulated in recent years has changed our views with regard to infection and infectious diseases There is space only to discuss a few aspects of this question so I will choose those which seem to be of the greatest interest not only to the medical profession but to the public in general.

MODE OF INFECTION IN VARIOUS DISEASES

The first example is cholera the disease which took such a terrible toll of the population of London and other large towns in Chadwick's day and the prevalence of which was influenced more than that of any other perhaps by the environmental reforms which he initiated Though Chadwick was wrong in attributing the propagation of cholera to atmospheric impurities he was right in connecting its prevalence with the appallingly filthy conditions under which the working classes in our large towns then lived and in insisting upon efficient drainage street cleaning and the provision of a good water-supply as the chief means of combating this and many other diseases then prevalent We know now that cholera is spread chiefly by water and food contaminated with the specific vibrio rather than by "atmospheric impurity" or an "epidemic atmosphere" but if "atmospheric impurity" can be taken to cover infected droplets then he was right about the method of spread of many common epidemic diseases other than cholera and his demand for better ventilation and the abolition of overcrowding for the prevention of these diseases

Malaria is another disease which used to be attributed to the peculiar constitution of the air in certain places—usually referred to as a "miasma," as the "ague" (as it was formerly called) was known to be prevalent chiefly in damp and marshy places where mists were common The story of the mosquito's incrimination and the proof that it conveyed the causative parasite to man by its bite has often been told and is familiar to all, but no one who has investigated a great malaria epidemic would pretend that all the factors operating in the spread of the disease are yet understood

In the case of scarlet fever the change in our views has been not so much in the direction of rejecting one channel of infection in favour of another, as in a changed estimation of the importance of the various infection mechanisms which may operate, the discovery of the important rôle played by carriers, and the recognition of a number of other diseases or conditions as due to the same micro-organism and therefore capable of being caused by infection from patients suffering from other diseases of the same group Not many years ago the infection in scarlet fever was believed to be conveyed chiefly by direct contact with the patient, his clothes, the books which he read, the flakes of skin shed from his body during "peeling," &c Nowadays, however, though we still recognise the dangers of direct contact, we know that infected droplets in the breath of a patient—not only of a scarlet fever patient but of certain persons suffering from tonsillitis, sore throat, rheumatic fever and puerperal fever, or of the carrier of a hæmolytic streptococcus—are the chief sources of danger to others

Our views about the spread of diphtheria have changed still more in recent years, but I have been astonished to find that the old idea of this disease being contracted from "bad drains" still persists even among educated people Droplet infection is, of course, the chief method of spread in diphtheria, and though the causative organism *Corynebacterium diphtheriæ*, commonly known as the Klebs Löffler bacillus, can be conveyed by direct contact, this mode of transmission is probably less common even than in scarlet fever

THE RÔLE OF CARRIERS

No discovery, perhaps, since the "germ theory" was established has shed greater light on the epidemiology of infectious diseases than the demonstration of the carrier state The origin and distribution of many epidemics of diphtheria scarlet fever, tonsillitis cerebro spinal meningitis, &c, were in fact quite inexplicable until it was shown that healthy persons often harbour the causative organisms of these diseases in their noses and throats whilst the gall bladders of other persons may harbour the typhoid bacillus in the same way, leading to excretion of the organism in the stools and so to the contamination of food &c handled by the infected but healthy carrier A transient carrier state is probably extremely common but the condition may persist for many years and be most intractable to treatment

DIFFERENT "DISEASES" DUE TO THE SAME ORGANISM

I have already remarked upon the fact that a disease is a clinical not a bacteriological entity and that the same disease, or complex of signs and symptoms, may be due to infection by a variety of different organisms The converse may, however, also be the case—i e, a number of different diseases may be due to infection by the same micro-organism. Perhaps the most striking illustration of this truth—or at any rate one of the most important from the practical point of view—is afforded by the group of diseases and conditions due to infection with various hæmolytic streptococci This group includes scarlet fever, streptococcal tonsillitis and epidemic sore throat, puerperal fever, and probably acute rheumatism commonly known as "rheumatic fever"

The connexion between scarlet fever and puerperal fever has been suspected for at least a century and has been the subject of hot and sometimes acrimonious debate Although suspicion was aroused by the occasional occurrence of cases of puerperal fever in the practice of a nurse midwife who had been attending a case of scarlet fever or had been accidentally in contact with one, proof of the connexion was impossible until the causative organism in the cases of each disease had been shown by modern methods of bacterial typing to be identical and the origin of many cases of puerperal fever due to the hæmolytic streptococcus was difficult to explain before the existence of the carrier state was recognised

Puerperal sepsis, which accounted for 1006 deaths in this country in 1935, has been and still is one of the hardest problems of preventive medicine, but recent work by White (1936) and others at Queen Charlotte's Hospital has shown how difficult it is to rid a room occupied by a puerperal fever patient of the specific organism, and the infection of women recently delivered, by hæmolytic streptococci carried in the noses and throats of those attending them is also well established It is hoped that the precautions indicated by this recent work may lead to a great reduction in the future incidence of the disease

The demonstration that cases of acute rheumatism and scarlet fever may result from the presence in a community of cases of streptococcal tonsillitis or epidemic sore throat has resulted chiefly from work in schools in this country and America and has thrown a flood of light upon the epidemiology of these diseases Scarlet fever, which has always hitherto been regarded as a highly specific disease, is now recognised to be merely one of several ways in which the body may react to infection with a hæmolytic streptococcus A pin point, flat red rash of a certain distribution is characteristic of scarlet fever (though such a rash is not peculiar to this disease), but a patient with scarlet fever showing this sign may give rise to a case without this rash but with every other sign and symptom of the infecting case This discovery is, naturally, of the greatest importance for the control of scarlet fever and the associated diseases Okell and Elliott (1936) and Garrod (1936) have recently described the occurrence of cases of scarlet fever in the ear, nose, and throat wards of two large general hospitals in London, which could not be traced to infection from any definite primary case of scarlet fever but became explicable at once when swabs were taken from the throats of the patients and the staff of the wards and the hæmolytic streptococci grown from these swabs were typed In the case of rheumatic fever we are not at present quite so sure of our ground, for though it seems almost certain that hæmolytic streptococci which may have been acquired from a patient suffering from scarlet fever or epidemic sore throat play a definite part in the production of this disease it seems possible that an ultramicroscopic virus may also be concerned

CROSS INFECTION WITH DIFFERENT STRAINS OF THE SAME ORGANISM

Another discovery of the greatest practical importance that has been made in recent years chiefly in connexion with the group of hæmolytic streptococcal diseases is that there are numbers of clear cut types of some kinds of micro-organisms and the limitation of immunity to reinfection to the particular type *causing the infection I cannot here discuss the very* difficult subject of immunity but it is necessary to refer to one or two of the phenomena of immunity in order to make clear the phenomena with which I am now dealing Different micro-organisms vary very much in the degree of immunity which they excite in their host Some give rise to only a *temporary immunity* to reinfection by the same organism which persists only so long as the living parasite is present in the host s body This is the type of immunity found in syphilis, tuberculosis malaria trypanosomiasis piroplasmosis and probably undulant fever and what Edmond Sergent and Parrot (1935) have christened prémunition Other parasites give rise *to a more lasting immunity* which may gradually fade away or may be life long as in measles typhus typhoid yellow fever small pox, chicken pox hydrophobia plague and anthrax

This acquired immunity (in contradistinction to inherited immunity) is highly specific but again its specificity varies Thus the immunity acquired as the result of infection by a particular parasite may give protection against all types within the parasitic species or only against the particular type which has caused the infection The latter narrow specificity is unfortunately characteristic of the hæmolytic streptococci and this fact is of the greatest practical significance as it means that a patient suffering from a disease or condition due to this organism may acquire an added infection due to a different type of the same organism from another patient suffering from the same disease It is for this reason that the introduction of a patient suffering from middle-ear disease into a scarlet fever ward may lead to a spread of middle ear disease throughout the ward though all the patients are infected already with a hæmolytic streptococcus but not perhaps with the particular type of this organism which had previously set up middle-ear disease in the newly arrived patient The same applies to other complications and it is clear that such swopping of streps is a very serious danger against which all possible precautions should be taken Such a precaution is the separate isolation of individual scarlet fever patients until at any rate the type of their infecting organism has been determined in the laboratory or can be assumed from the circumstances attending their infection (for instance two members of the same family or two children definitely infected one by the other or both from a common source) In the fever hospital this isolation can be effected either by barrier nursing (that is to say by treating individual patients in a many bedded ward as if they were in separate wards and suffering from different diseases) or by accommodating the patients each in a separate cubicle These precautions are being increasingly adopted in infectious diseases hospitals and have reduced the incidence of complications and consequently the frequency of permanent damage and the length of stay in hospital very considerably wherever they have been employed The view is gaining ground that the isolation period in cases of scarlet fever free from complications should be reduced (except in special cases) from the old six weeks to three weeks or less and where this has been tried complications have been fewer for the reasons which I have just given and much expense and waste of school time has been saved

VARYING PERIODS OF INFECTIVITY

Our views about the duration of infectivity in *various diseases have changed greatly in recent years* as the result of both bacteriological and epidemiological investigations Scarlet fever is an example of this change The significance with regard to infectivity of complications involving a discharge from the ear or nose in this disease as also in diphtheria has been recognised for a good many years now but the bogy of peeling *has been laid much more recently* and I am afraid not yet completely The skin that flakes off because of the preceding rash and when the patient is recovering from the disease is now known to be of very little importance as an infective agent so that it is now considered unnecessary to isolate the patient until this process is complete or *to make him sore by scrubbing or pulling off the* flakes which are not yet ready to separate Another disease in which the period of infectivity had previously been much over-estimated is whooping cough It is still popularly supposed that a patient suffering from this disease is infectious so long as they whoop whereas it has been clearly demonstrated that on the contrary by the time the whoop *first appears* the patient has already ceased to be infectious Much the same story might be told of measles which is most infectious in the early stages before the rash appears soon after which the child probably ceases to be a danger to others Influenza and the common cold are also probably most (or perhaps only) infectious in their early stages

THE SERIOUSNESS OF CERTAIN DISEASES

Anyone who can look back to the beginning of this century will be aware of great changes in the respect with which various infectious diseases have been regarded The most striking instance of this is perhaps small pox a very serious killing and disfiguring disease in the past that is now regarded by *many in this country as a trivial ailment tiresome* because of the isolation which it involves but not serious enough to make even the slight inconvenience of vaccination worth while I do not propose to enter now into the controversy which has raged and still rages around the question of compulsory vaccination and I would only remark that in spite of the undoubted change of type of the disease as seen in this country and the very thorough precautions taken at our ports to prevent the entry of major small pox from abroad I cannot forget the terrible cases of confluent and hæmorrhagic small pox *with which* I had to deal in Willesden in 102 or *the fact that the* first traceable case in this epidemic had no definite illness and only two small spots and I confess that I view with some alarm the rapidity with which the population of England is becoming unprotected by the neglect of vaccination

Scarlet fever is another *instance of a disease* which has become far milder in the last fifty y but judging from the history of epidemiology it would, I think, be unwise to assume that it will always remain so.

Measles and whooping cough deserve mention here for a different reason. These two diseases because they are usually of a trivial nature are unfortunately still often regarded as of little danger to the infected child and such ignorance is responsible in a large degree for the death of about 2000 to 3000 children from measles and 2000 children from whooping cough every year. These children are killed by the pneumonia which often supervenes in these diseases and leads to death. This danger has been pointed out by many concerned with the public health, but it cannot be too widely made known as these deaths are mostly preventable if the danger is realised and good conditions and nursing secured for the child before it is too late. Hospital accommodation cannot of course be provided for every case of measles or whooping cough, but in my opinion a good many of the isolation hospital beds now used for scarlet fever might, by reducing the isolation period for the latter disease, by the more economical use of beds made possible by the provision of more small wards and cubicles, and by isolating scarlet fever cases in their own homes wherever possible, be made available for those cases of measles and whooping cough in which home conditions, the debility of the child, &c., make the danger of pneumonia especially great.

Disinfection and Prevention

The word "disinfection" suggests, perhaps, first of all the treatment of rooms, furniture, clothing, &c. that have been used by a patient suffering from an infectious disease so as to remove all danger of other people becoming infected. Disinfection to be effective, however, may obviously need to be directed also to the destruction of disease germs on the body or in the nose, throat, gall bladder, &c. of the patient or of a carrier who caused his infection or who was infected by him. The best example of the persistence of an old practice long after the conclusions upon which it was based have been shown to be false is again scarlet fever. Consider what happens when a case of frank scarlet fever with all the classical symptoms occurs in a family. On the grounds that this is the first case of the disease in this particular household, that the infection has therefore been contracted outside, and that if promptly removed the infection of the other members of the family may be prevented, the patient is removed to an isolation hospital. Now we know, as I have already remarked, that scarlet fever is only one of the many different manifestations of infection by a hæmolytic streptococcus, so that the patient in question may very well have been infected by another member of his family who is either suffering from tonsillitis, sore throat, or rheumatic fever, or who is merely a carrier. By removing the patient in such circumstances whilst leaving the original source of infection in the house one clearly does nothing to arrest the spread of the disease, which was once regarded as the primary object of the isolation of infectious diseases, but one which it seldom achieves, whilst one may leave behind cases requiring the treatment that is more and more coming to be regarded as the most useful function of the isolation hospital. The logical course would be to examine all the members of the household and to isolate any who are shown to need treatment and this is not infrequently done. Sometimes difficulties arise owing to the natural hesitation of doctors to diagnose a typical case as scarlet fever (usually the only way to secure their proper isolation) when this diagnosis may be rejected (from one aspect quite justifiably) by the medical officer of health or the medical superintendent of the isolation hospital. I am glad to say, however, that some of the more progressive medical officers of health in this country, with the approval of the Ministry of Health, have found ways of overcoming this difficulty, but the old practice still persists in places.

In large centres of population the ad hoc isolation hospital is probably the most practical and economical way of dealing with infectious disease as the beds in such a hospital can always be used fully or almost fully, and the equipment and staff can be efficient and sufficient. But in rural areas often the only solution found has been to make use of modern transport, reduce the number of hospitals, and concentrate the patients in a few good sized ones. Another and very interesting solution is, however, widely employed in Denmark, Sweden, and other northern countries, and I mention it as a practical demonstration of the value of a realistic attitude in dealing with such problems. In these countries each county or other fairly large rural district is provided with a general hospital of perhaps 80 to 100 beds, with an administrative, surgical, medical, maternity, and—mark you—infectious disease block. The infectious disease block is usually an integral part of the group of blocks, and though of course not connected with the other blocks it is only separated from them by a short distance—perhaps twenty to thirty yards—yet spread of infection to the other parts of the hospital never occurs, thanks to a simple but efficient routine by which the nursing staff have their midday meal in the infections block and change their clothes and wash when they come off duty and before mixing with the other nurses. Such a plan has the advantages of providing for infectious patients within reasonable distance of their homes, economy in administration, and the availability of all the medical, surgical, radiological, and laboratory facilities, both of staff and apparatus, for diagnosis and treatment.

CURRENT AND TERMINAL DISINFECTION

To return to the subject of disinfection, a great deal of money, time, and trouble has been wasted in the past on applying general methods of disinfection to every kind of case instead of suiting the procedure to the particular circumstances. Disinfection to be rational should surely be founded on knowledge of the infecting micro-organism concerned. For instance, the ultramicroscopic virus which causes measles is a delicate organism easily destroyed by exposure to light and air, whilst the anthrax bacillus is a highly resistant organism. Moreover, the ultramicroscopic viruses are peculiar in their resistance towards chemical disinfectants, being extremely resistant to substances such as carbolic acid whilst being readily killed by permanganate of potash.

In the past reliance has been placed chiefly upon "terminal" disinfection (the treatment of the patient's room, clothes, &c., after recovery or removal to hospital), whilst "current" disinfection (the treatment of infective material in the sick-room during the patient's presence there) has been much neglected. Current disinfection has however been shown in recent years to be all that is required in such diseases as measles, whooping cough, german measles, and diphtheria, terminal disinfection in such cases being confined to the free use of soap and water and thorough ventilation. A recent survey of the practice in regard to disinfection of a large number of countries represented at the Office International d'Hygiène publique in Paris (1934) showed that in the United States and in certain European countries terminal disinfection has been abandoned without any apparent increase in the incidence of infectious diseases. It is disappointing, however, to note that although this changed practice has been adopted in a number of large towns in this country we are apparently far behind the United States and certain other countries in this respect. The effectiveness of current disinfection depends, it is true, upon the thoroughness and intelligence with which it is applied, and is inapplicable in hygienically backward countries, but we should hardly care for our country to be so classified.

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A MUNICIPAL ACCIDENT SERVICE

CARDIFF'S PIONEER SCHEME

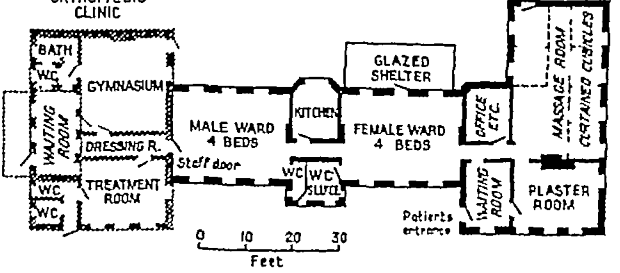
A JOINT *subcommittee including representatives of Cardiff city council and of the two voluntary hospitals*, viz., Cardiff Royal Infirmary and the Prince of Wales Hospital, was set up in January, 1936, to *consider matters of interest to the bodies concerned*. Recorded in the minutes of this subcommittee for April 20th, 1936, is a request from the representatives of the voluntary hospitals that the city council should undertake as much as possible of the work for accidents' and the representatives of the council willingly promised to do so. Thus did the voluntary hospitals of Cardiff give their blessing to a scheme, unique of its kind in this country, whereby the care of accidents is undertaken by the municipal authority with the coöperation of all the hospitals in the town.

The scheme as drawn up by the medical officer of health, Dr. J. Greenwood Wilson, has now been in operation for over a year, and the report on its organisation and first year's working has been submitted by him to the Interdepartmental Committee on Fractures. The space required for housing the accident service was found in City Lodge Hospital, a poor-law institution in the centre of the town, the medical service of which had been largely superseded by a new public health hospital at Llandough. The accommodation adapted to the uses of the accident service is shown in the accompanying plan. It was considered convenient to house the municipal orthopædic clinic in the same block, partly because the visiting surgeon is in charge of the clinical work both in the accident and in the orthopædic departments, and partly because there was a considerable amount of plaster work connected with the orthopædic treatment that could most conveniently be done by the sister in charge of such work in the fracture unit. Reference to the plan will show that the block of rooms as adapted contains two wards, one male and one female, with four beds each. The fracture clinic occupies the rooms to the right of the wards and the orthopædic clinic the rooms to the left. A portable X ray apparatus is a feature of the fracture unit; the films are taken, developed, and interpreted in the unit. Where necessary the help of the visiting radiologist and the use of the main hospital X ray plant are available.

City Lodge acts as a casualty clearing station with Llandough Hospital as the base hospital. Accident cases of all kinds are brought straight to City Lodge, where they are classified as (1) head injuries, (2) laceration of the soft parts, (3) fractures. First-aid treatment is given, X ray examinations carried out, and fractures reduced and splinted. As far as possible cases are sent home in their splints and appointments made for them to attend for out-patient treatment. All cases definitely needing hospital treatment are transferred, either immediately or after a stay of twenty-four to forty-eight hours, to Llandough Hospital. The eight beds in the unit are available for cases of head injury or shock not fit for immediate transfer, and also for patients recovering from anæsthetics, or with plasters which require time for drying. No open operations on fractures are done at the clinic. A minimum of 10 beds are reserved at Llandough Hospital for the visiting surgeon, and to these he can admit fracture cases requiring major operations.

The personnel of the accident service is a team consisting of the visiting (orthopædic) surgeon, Mr. A. O. Parker, a resident assistant surgeon, who is a member of the resident staff of City Lodge Hospital and has been engaged on account of his special knowledge of fractures, and a sister in charge of the plaster work. The two last named accompany the visiting surgeon when he goes to Llandough Hospital to operate on fracture cases. They also independently visit Llandough to supervise the treatment of patients transferred there, to adjust extensions and follow up results, and so forth. The clerical work is done by a clerk typist who keeps records of the cases, entering particulars on the record cards and typing the clinical notes from dictation. She also types correspondence with general practitioners, files and indexes records and X ray films, and interchanges notes between the unit and Llandough Hospital. An almoner recovers

FRACTURE UNIT



a proportion of the outlay from insurance companies under the Road Traffic Act and from other sources. From March, 1936, when she was appointed, to the end of July, 1936, a sum of £789 was recovered. The total cost from September, 1935, to July, 1936, was £2492. It is anticipated that with increasing experience more and more of the cost will be recovered. There is a scale of charges of which some of the items are: initial attendance (for private patients), five shillings; massage, per visit, eightpence to one shilling; plasters, three shillings to six shillings; dressings, sixpence; residential treatment per day, 4*s.* 3*d.* at City Lodge, 11*s.* 7*d.* at Llandough Hospital.

Dr. Wilson regards the Cardiff fracture service as an example of what can be done with existing resources without embarking on new and costly schemes of building and equipment. The adaptation of the whole block at City Lodge Hospital cost £290, of the fracture clinic itself, £161. The clinic was equipped with all essential apparatus, including a Hawley table, a portable X ray plant, filing cabinets, and radiant heat baths, for the sum of £370 10*s.* The number of new cases treated at present is well over 100 a month. Since its opening in September, 1935, 973 cases have been treated (with 2917 attendances), 508 as out-patients, the remainder being admitted to beds either at City Lodge or Llandough. The statistics submitted show a wide range in the type of fracture treated, and the results are encouraging. Patients with Colles's fracture for example, have returned to work at once, and the wrist has been normal, requiring neither splinting or treatment, in six weeks. Pott's fractures have been restored to normal in 12–14 weeks.

The routine work of the unit is done by the resident assistant surgeon. He sees daily all fractures that require it; twice a week he has under review all cases attending the clinic. The visiting surgeon attends twice weekly and has referred to him all complications of special difficulty. He is on call for emergency cases in which his advice is needed, and, of course, takes charge of cases admitted to Llandough.

The service is worthy of special note because it would appear to be the first attempt on the part of a municipal authority in this country to take responsibility for dealing with all the accidents in the area, and because of the coöperation which has been achieved between all the hospital services of the city. The low cost of equipment and the possibility of recovery of a substantial proportion of the running expenses may well encourage other local authorities to follow suit.

MEDICINE AND THE LAW

The Registered Pharmacist's Monopoly

AN Ilford firm of druggists was fined last week for unlawfully using the description "pharmacists" when not registered under the Pharmacy and Poisons Act of 1933. The solicitor to the Pharmaceutical Society (the body entrusted by Parliament with the registration) prosecuted under Section 3 of the Act. The defendant company, he said, had sold cough and neuralgia mixtures in bottles labelled "Hankinsons Cash Pharmacists." This was likely to mislead the public into believing that the retailers were qualified chemists. In 1929 the firm had been fined for applying a false description to goods and in 1930 for unlawfully selling poisons. The defendants said they thought they had a period of grace wherein to discontinue the use of the description and to change the labels. The bench pointed out that the firm had plenty of time in which to become acquainted with the Act of 1933, Section 3 of which was brought into force on May 1st last. A fine of £10 was imposed on each of two summonses.

Sections 1 and 2 of the 1933 Act, dealing with membership of the Pharmaceutical Society and the issue of certificates of registration, took effect at the end of 1933. The conversion of membership from an optional to a compulsory basis has naturally led to a large increase of members. While the Act in effect makes the society generally responsible for the training, registration, and supervision of pharmacists, Section 3 forbids unregistered persons to use the title of "chemist and druggist," "druggist," or "pharmacist," or, in connexion with the sale of goods by retail, the title of "chemist." It also forbids the use of any title, emblem, or description reasonably calculated to suggest the possession of qualifications which are not in fact possessed. One test case has already established that the use of a sign bearing the words "Chemists' Sundries" infringes the Act. This statutory restriction of the right to a professional description has special significance for the public because the sale of poisons is, by other parts of the 1933 Act, substantially restricted to registered pharmacists carrying on business in registered premises under the personal control of a qualified chemist. Parliament was not thinking so much of strengthening a professional monopoly as of protecting the community from serious risks which are inevitable if poisons are too easily obtained or if the retailer is ignorant of the properties of the goods he sells and subject to no supervision.

BUDAPEST

(FROM OUR OWN CORRESPONDENT)

THE EÖTVOS LORÁNT RADIUM INSTITUTE

A NEW institute for X ray and radium therapy named after the Hungarian physicist, Baron Lóránt Eötvös, which was recently opened, is said to be the largest in Central Europe. There is accommodation for 100 in-patients, and the equipment and apparatus are designed on the most modern lines. The radium department has bought 4742 mg. radium from a Brussels firm at 35 dollars per mg. The X ray therapeutic apparatus is on the Chaoul system, and plans are now being made for the construction of two further units, each of 400 000 volts. The director of the institute is Dr. William Manninger, professor of surgery in the University of Budapest.

CALORIC NYSTAGMUS

Who discovered that the nystagmus caused by a hot aural douche is due to the heat and not the pressure of the fluid? The discovery is commonly attributed to Bárány, professor in the University of Upsala and a winner of the Nobel prize, who was of Hungarian descent. Dr. K. Martin Sugár however takes up the cudgels on behalf of the late Prof. Andreas Högyes, and claims priority for him. He maintains that though Högyes in his experiments may not have applied heat and cold directly, he provoked nystagmus with various irritant and destructive agents, and alluded to the effect of temperature, showing that ice merely applied to the mastoid groove produced bilateral nystagmus. Even those who oppose Högyes's claim acknowledge that Baginsky had stated in 1881 that excessive temperature was responsible as well as the pressure in the tympanic cavity But it has been pointed out that Högyes then entered into a debate with Baginsky and denied the action of increased pressure saying that the sole factor was the irritation of the labyrinth by heat

THE ANTAGONISM OF THYROXINE AND VITAMIN C

J Mosonyi who has been giving thyroid hormone to guinea pigs, has found that the vitamin C content of their adrenals and liver is considerably decreased because these organs at once secrete a greater amount into the blood This may be concluded from the fact that after the administration of thyroxine more ascorbic acid than normal is excreted in the urine We can assume says Mosonyi, that it is the thyroid that physiologically regulates the appearance of vitamin C in the blood stream But after removing the thyroid the excretion of vitamin C in the urine does not decrease which shows that there are other factors besides thyroxine which act in the mobilisation of the vitamin C According to Mosonyi's test the testicular hormone proved to be most effective

EXPERIMENTAL IMMUNITY IN SYPHILIS

Dr J Vásárhelyi has treated 16 syphilitic rabbits with large doses of neoarsphenamine—3 doses of 0 10 g per kg of body weight, 110 247 and 333-409 days after the infection—and reinfected them after 85-90 days No clinical symptoms appeared in any animal. After further inoculations spirochætes could be found after 75-127 days only in 4 of the animals the remainder being entirely free from both symptoms and organisms On these grounds Vásárhelyi feels justified in stating that the drug produces immunity

SUICIDE STATISTICS IN BUDAPEST

The Ambulance Society has just published the 1935 suicide figures in the capital There were 2252 cases—924 men and 1328 women The commonest agents (1218 cases) were the poisons chiefly the narcotics veronal and morphine caustic soda and vitriol. Stabbing was responsible for 220 deaths and gas for 205 There were 167 suicides in the Danube most being women 148 hanged themselves 90 jumped from higher floors of buildings while firearms were used by 93 There were 33 who threw themselves before trams buses and trains

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

THE following promotions have been made —

Surg Comdr (D) to Acting Surg Capt (D): A Lawrey O.B.E

Surg Lt Comdr (D) to Surg Comdr (D): H J Luck, T Hunt and C J Finnigan.

Surg Lt -Comdr R. L G Proctor to be Surg Comdr

Surg Comdr (D) F R. P Williams to *Pembroke* for R.M Infirmary Deal

Surg Lt.-Comdrs. (D) R W Stevens to *Excellent* and J M Park to *Suffolk*.

Surg Lt S R G Pimm retires at own request

Surg Lts. P G Burgess to *Abingdon* G A Lawson to *Drake* for R.N Hospital, Plymouth; and M G Peever to *Endeavour* (on commg)

Surg Lt (D) D N Williams to *Malaya*.

H W Gibbs entered as Surg Lt (D) for short service and appointed to *Victory* for R.N Hospital, Haslar

ROYAL NAVAL VOLUNTEER RESERVE

Surg Capt L. S Ashcroft V.D has been appointed an Honorary Physician to the King from Jan. 1st 1937 in succession to Surg Capt J B Ronaldson V.D who then vacates his appointment

Surg Lt -Comdr W J Payne to be Surg Comdr

Surg Lt -Comdr (D) L A T McLean to *Victory* for R.N.B

ROYAL ARMY MEDICAL CORPS

Lt -Col and Bt Col (temp Col) R. C. Priest K.H P and Maj (temp Col) A G Harsant O B E relinquish the temp rank of Col on ceasing to be empld as Consulting Physician and Surgeon respectively to the Military Forces in Palestine and Egypt

Lt -Col C M Finny O B E to be Bt -Col

Maj S Smith to be Bt. Lt -Col

Lt -Col (temp Col) S W Kyle relinquishes the temp rank of Col. on ceasing to be empld as A D.M.S 5th Div

The undermentioned Lts (on prob) are confirmed in their rank :—

J F Wilson and A B Dempsey

The results are announced of the examination (in written subjects) of officers with a view to promotion The successful candidates were: Maj W R D Hamilton and Capts F McL. Richardson W R C Spicer H. A Ferguson, P J L. Capon, J L. Snow and A N T Meneces

Short Service Commissions: The undermentioned Lts (on prob) are confirmed in their rank: J A O Gorman R Walker D V Taylor D S Wilson and T A. Smitham

TERRITORIAL ARMY

Capt E Shipman, from Univ of Lond. Contgt (Med Unit) Sen Div O T C to be Capt

W N P Wakeley (late Offr Cadet R.S.M Univ of Lond. Contgt Sen Div O T C) to be Lt

J M Matheson (late Offr Cadet Serjt Edinburgh Univ Contgt (Med Unit) Sen. Div O T C) to be Lt

The undermentioned promotions are made :—

To be Bt Lt -Cols: Majs L McI Weeks M C T.D J Marshall M C and A Topping T.D

Lt T Gibson from T.A Res. of Off (23rd Lond R) to be Lt

ARMY DENTAL CORPS

Maj A T Madin is placed on the h p. list on account of ill health

ROYAL AIR FORCE

Group Capt B A Playne D S O to be Air Commodore

Wing Comdrs R. J Aherne M C. and T Montgomery to be Group Capts

Squadron Leaders J G Russell, J B Gregor R H Stanbridge R. W White G P O Connell and A Dickson to be Wing Comdrs —

Flight Lt A. H Osmond to R.A F Station Leconfield

Flying Offrs G I Jones to R.A.F Station Dishforth D F S Shaw to No 2 Flying Training School Digby G B Macgibbon to No 3 Flying Training School Grantham E J Moynahan to No 6 Flying Training School, Netheravon; J R Collars to No 8 Flying Training School Montrose; J D Cran to No 9 Flying Training School Thornaby and J H. Preston to No 11 Flying Training School Wittering

Flying Offrs L M Crooks C F R. Briggs and W J Fowler to be Flight Lts.

Dental Branch.—Flying Offrs R. M Brown and W I Nelson to be Flight Lts.

INDIAN MEDICAL SERVICE

Maj A H Craig to be Bt Lt -Col

Maj R. Sen to be Lt -Col

GLASGOW HOSPITALS —The sum of £15 001 the residue of the estate of Mr A M Hunter has been equally divided among the Royal, Western and Victoria Infirmaries and the Sick Children's Hospital while the residue of Mrs Hunter's estate £14 8[illegible] has been [illegible] among the three infirmaries

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month, his name can be seen later in the half yearly index

FROM A PUBLIC HEALTH CLINICIAN

II

WITH *Physical Education* on the hoardings and *Physical Fitness* on the air it behoves us doctors to reflect thereupon, and maybe to comment thereanent Athletics and other exercises may help to create sound bodies and to prolong life, but to be a successful athlete implies the possession of a sound body, and its possessor is likely to live long if no accident waylays him a motor calamity for instance, cancer, or a serious infection It is arguable that such a one might have lived still longer had his arteries not been strained by exertion, but no figures are available, as far as my knowledge goes, to promote this argument from a conversational to a scientific plane

The importance of athletics and ball games is not confined to muscular growth, such pursuits also train the eye, quicken the reactions, and by improved coördination make skilled movements more possible The question has other aspects also, for the coöperation and spirit of ball games has a social value, discipline is promoted, self control developed, and a knowledge of human nature obtained The fortunate 20 per cent amongst us who are good at games, especially perhaps the fiercest of them, Rugby football, will probably grow wise and experienced at a younger age than the remaining 80 per cent The wisdom so gained will prove invaluable later in public work, be it in council, committee, or as a member of a local authority We see statues to various notable and great men in Trafalgar square and Westminster Abbey, statues elsewhere to the Black Prince or Queen Boadicea, but never to the world's greatest benefactor the inventor of the ball. Perhaps there was no one inventor, but even then, as an abstract conception, he still deserves commemoration

But the creation of general physical fitness is not so simple as might be inferred from much that has been written, it is not enough, alas, to talk about it or to prescribe exercise or diet Any exercise allowance must vary widely both individually and with regard to age Consider for a moment the factors conducive to longevity In order of merit I would put constitution, luck, avoidance of accidents in the broadest sense, and no excesses, yet the alcoholic who escapes damage to vital organs may survive to a ripe old age, an explanation of which may perhaps be found in the amount of water swallowed with the alcohol

Conversing with a much respected, elderly, but by no means senile colleague, he disclosed the rules of life which had been responsible, in his case, for a healthy and happy old age The first was "take no exercise," the second 'keep warm" A little reflection will suggest that there may be something in it Nevertheless there are advantages in keeping before the public the aim of physical fitness

* * *

Some of us sometimes wonder if it is always proper to advise patients so to order their lives that they may *live long* regardless of any entailed curtailment of their beneficient activities It is obviously advantageous to insurance companies that everyone should live as long as possible, but the benefit to the community is less obvious, it is much more obvious that everyone should persist as long as possible in activities which indirectly or directly assist the rest of us even though by so doing the individual may shorten his life This does not refer to euthanasia for the relief of suffering from incurable disease (that is another story), but to advice that may be given to a business man, or professor, that perhaps his blood pressure is rising, and that he should reduce his work by half Even so life may not, as it happens, be prolonged but according to the present tenets of our profession it ought to be Many maintain, rightly I think, that it is deeds and achievements that count and not longevity Those with high blood pressure are often among the very ones who achieve things

A colleague leading an active life confided to me that his blood pressure was very high—should he retire? He could ill afford it "Take no notice of it," I suggested, "and see what happens" That was 14 years ago, and he is still in active work. This experience led me to give similar advice more boldly to another colleague similarly handicapped, and with similar results Incidentally I suspect that some such blood pressure readings, as well as certain others followed by a rapid cure under treatment, are single readings taken when the patient was highly strung or mentally disturbed for some reason, and a reading repeated the following morning might have given a very different figure But it is true we all encounter cases where a high blood pressure has disastrous consequences

* * *

Psychology and dream interpretations are no longer such popular dinner time topics as they were 10 to 15 years ago My own knowledge of the subject is limited Some years ago feeling anxious to learn something of the progress in those directions I selected as the subject of a promised lecture "dreams and their interpretation," and it therefore became necessary to read books by Freud, Jung, and Adler A smattering of information was thus obtained, and I developed views, perhaps ill founded views, on the latest work It seemed that the authors cited had ploughed new ground and stimulated much useful thought, but some of the things written appeared perilously near to nonsense For instance, the suggestion that the not uncommon dream when the dreamer is attempting to crawl through a confined space is a prenatal recollection of his fœtal feelings experienced during the act of birth Perhaps the time has now come to leave our guides behind and think again In Russia, I am informed, Freud and his school are ignored, and thought and psychological research are proceeding along more novel lines

It may not be a retrograde step to seek dream explanations more frequently from physical sources. Surely the dreams to investigate are preferably the common dreams which are likely to have an equally common origin Dreams of flying and trying to escape when the feet cleave to the ground may be quoted and may well have a physical basis Once we solve these simple dreams we may secure factors which will enable us to split up and analyse more complex pictures Such common dreams as anxiety about passing an examination which in reality we passed 30 to 40 years ago or of forgetting an appointment or of leaving things behind may likewise have a simple, though in their case a psychical, basis

The flying dreams seem to me to have their cause in a partial awareness of respiration The flight is usually up and down and not in the same horizontal plane Again it is difficult sometimes to move a limb when just beginning to be aroused from sleep and that might be the basis of the dream with cloying feet A friend tells me that whenever he goes to sleep with a feeling of nausea he is likely to dream of being on a ship at sea or to see waves passing rhythmically before his eyes. For this the explanation seems simple though not romantic

But enough of these reflections or the writer will be out of his rather shallow depth.

* * *

A South African experience compelled me to share a room with a bricklayer and a more perfect bedroom companion I have never met There was no egotistic scramble for the minor comforts of life but the self sacrifice and courtesy of a Spanish Grandee which soon became mutual Pondering why this man whose education had been elementary was such a pleasant companion while others we encounter who may have been to Eton and Cambridge are not always so pleasant, the answer seemed to be that this one had been trained in the best school of all—*adversity*—an advantage not shared by everyone Shakespeare and others have told us of the uses of adversity and most doctors could tell how they have seen characters tempered and improved by adversity and suffering Not all natures will react favourably to difficulties but fortunately the great majority do so react

* * *

The value of *quotation* in speech and writing has much diminished The Victorians enriched their heavy orations with long Latin or Greek quotations which would bore hearers to day and indeed did little more even then than advertise the classical erudition of the speaker To day many speakers still interpolate poetry or prose quotations suggesting again the erudition of the speaker but often without clarifying the subject under consideration. In the past I have made another use of quotation; if a trite aphorism or bright idea came to my mind I would produce it as a quotation from some distant author It seemed that an audience paid more attention to my ideas if attributed to Dante or Milton of whose pages I am in fact profoundly ignorant To-day with the passage of years I rarely use quotations but endeavour to express myself clearly and give no one else credit for my ideas If such a step belittles my learning it were just as well belittled. Such ideas have no doubt occurred to others in the distant past but there is no harm in restating them to-day

CORRESPONDENCE

HÆMORRHAGE IN GASTRIC AND DUODENAL ULCER

To the Editor of THE LANCET

SIR,—In your last issue Hurst and Ryle state that the danger of hæmorrhage from peptic ulcers has been grossly exaggerated in papers recently appearing in British journals. I cannot help feeling that this statement calls for examination. Hurst, from figures collected by Baboy[1] says that the mortality rate for cases of peptic ulcer admitted under his care to Guy's Hospital on account of recent hæmorrhage and in which death was directly attributable to hæmorrhage is 4 8 per cent Compared with this Baboy sets out a table showing mortality rates of hæmorrhage from ulcer given by various authors some of which are over 20 per cent This table is misleading because no mention is made of the different criteria adopted by the various authors when compiling their statistics. For example Conybeare[2] arguing from the number of post mortems of all cases admitted to Guy's Hospital for hæmatemesis or melæna from 1911 to 1920 (inclusive) showed a mortality of about 4 3 per cent Burger and Hartfall[3] found the mortality from severe hæmatemesis at the same hospital from 1921 to 1930 (inclusive) to be 22 6 per cent. The last figure includes deaths from complications and there seems no useful reason why they should be omitted whether from cardiac failure or even following surgical intervention It seems quite clear therefore from a study of the available statistics that omitting cases of melæna the death rate in hospitals from severe hæmatemesis has not been exaggerated and is still disturbingly high. Another evident fact not stressed by Hurst and Ryle is that repeated hæmorrhage is the most serious prognostic sign A single bleeding however severe is rarely fatal. The mortality in Hurst's cases at Guy's which had further gross bleeding in the wards was 27 per cent.

With regard to blood transfusion another important point dealt with by these authors we found when examining a series of cases (Cullinan and Price[4]) and by subsequent experience that when it is considered necessary to transfuse because of severe anæmia it is wise to wait until several hours after the gross bleeding has ceased Not only does transfusion of itself fail to arrest hæmorrhage but it may even cause further bleeding if performed immediately To this rule there is one exception: in cases with severe anæmia when gradual bleeding has been going on for several days transfusion may be a life saving measure We also thought that the giving of enemata before the sixth day after a severe hæmatemesis carried a risk of further bleeding

I do not wish to imply in any way that because the mortality in hospitals from severe hæmatemesis is high that this is any reason for more frequent surgical intervention For the reasons Hurst and Ryle so clearly state immediate operation is very seldom desirable Their plea for the avoidance whenever possible of disturbing therapeutics and for treatment with quiet and rest in the widest sense is unassailable Courage lies not in action but in confident inaction

I am Sir yours faithfully

EDWARD R CULLINAN

Park Square West London Jan 4th

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[1] Baboy A. M and Hurst A. F (1936) *Guy's Hosp Rep* 86, 120

[2] Conybeare J. J Quoted by Hurst A. F (1923 24) *Proc R. Soc Med* 17 20; (1924) *Lancet*, 1 1093

[3] Burger G and Hartfall, J (1934) *Guy's Hosp Rep* 84 167

[4] Cullinan E. R and Price R. K (1932) *St Bart's Hosp Rep* 65 185

IN MEMORY OF JOHN BLAND-SUTTON

To the Editor of THE LANCET

SIR,—Perhaps a few lines may still be spared to one who was an old assistant surgeon of Sir John Bland Sutton at Middlesex Hospital, and who chances to be in surgical charge of the ward in the hospital which bears the name of the distinguished surgeon whose death we deplore

From former colleagues and from other distinguished surgeons who had come under his spell appreciative notices have already appeared in your columns, penned in words far more eloquent than mine , but none I think has done quite full justice to the really extraordinary dexterity, the craftsmanship, and the operative celerity of the man more especially in the surgery of the female pelvis, the branch of surgery which, as has already been pointed out by others, he did much to found and which he advanced and adorned

For many years I rarely missed his Saturday operating afternoon at "Middlesex" , he came at 2 o'clock and left precisely at 4 o'clock, having completed his regular quota of four "cœliotomies" for conditions as varied as a pathological spleen, a hydatid cyst, a cervical fibroid, or a cancerous colon He would have been the first to insist how much the afternoon's work had been expedited by the coöperation of his anæsthetists, formerly the late H Percy Noble and in the last fifteen years of his time at "Middlesex" by his loyal and devoted friend, Raymond Apperly None of his old house surgeons, dressers, or the spectators will ever forget his resource, his tricks of technique by which he facilitated the delivery and removal of formidable pelvic tumours, his sang froid and self reliance in unexpected crises, his urbanity and his unfailing courtesy whatever the emergency that might well have alarmed

If celerity at times led to error, none could have been more rapid to detect mistake or more speedy to make a quick decision and to rectify It required courage to open a bleeding extra uterine pregnancy without anæsthesia in a bed in a private house, to withdraw the gravid tube and to clamp it, while preparations were then made to deal more deliberately with the condition, and his success in removing the spleen in severe cases of pernicious anæmia long before the days of blood transfusion and of our present knowledge of medical therapy for this disease made his colleague, Dr Essex Wynter, regard surgery as the appropriate treatment for this malady

Although his warmest admirers cannot be blind to his technical imperfections in the surgery of the upper abdomen, when judged by modern standards, it must nevertheless be remembered that he was the second British surgeon to perform a successful choledochotomy, and nearly a quarter of a century ago he was practising gastro duodenal resection for non obstructive duodenal ulcer

Neither the "cranial box" nor the "thoracic cage" attracted him, although he did develop an interest in the surgery of the heart , his interests were centred in the "abdominal valise" and he was at his very best in its lower region

His pronunciation of some words was curious and the mention of this foible may still bring a smile to the lips of many, but if his rendering of the term "capsule" had no etymological support, his pronunciation of the word 'ureter' was backed by a Greek origin of which he was doubtless far more aware than those who were disposed to laugh pityingly at his supposed ignorance

His genius for friendship and for hospitality have been already referred to but his kindliness and generosity to the very junior may perhaps not be so well known, for in many instances his right hand knew not what his left hand was doing

I am, Sir, yours faithfully,

Harley street W Jan 4th GORDON GORDON TAYLOR.

AMALGAMATION OF HOSPITALS

To the Editor of THE LANCET

SIR,—On p 1550 of your issue of Dec 26th you say that it is proposed to "coördinate the work of" the Bristol hospitals (the local word is "amalgamate") so that each shall specialise in the type of case with which it principally deals—i e , surgery at the Royal Infirmary and medicine at the General Hospital. Another scheme proposes to collect all the "dont wants" (gynæcology, nose and throat, skins, &c) at what is now the General Hospital , but no details have been settled, and they are in any case immaterial Contrary to the implication in your note, each of these two institutions has for many years been a large teaching general hospital, completely equipped to treat every type of case—a state of affairs that it is proposed to end ! Were they adjacent, such a rearrangement of work might amount to no more than establishing a single unit in place of two But the Royal Infirmary lies outside the ancient city of Bristol, across the Froom river to the north west , the General Hospital lies just outside the ancient transpontine quarter of Redcliffe, south-east of the old city Between them lie a mile and a half of the narrowest and most crowded streets in the city, with the bottle neck of Bristol Bridge (with the adjacent wharves) in the middle Although 'bus and tram routes cross the city in most directions, no one has yet been daft enough to propose a route between these points It is from convenience rather than tradition that those living north of the Avon (even well outside the city) generally attend the infirmary, those living south the hospital. There is, in fact, no greater reason to "amalgamate" the two than to treat in the same manner, say, St Thomas's and the Westminster If it is desired to concentrate the really rare cases (so that, for example, one surgeon shall deal with all thoracic surgery another with all cerebral tumours) nothing more is needed than general agreement among the surgeons concerned—without which no "amalgamation" will bring concord There are many advantages in having more than one hospital , among others, the occasional disgruntled patient has at least the option now of trying his luck at another institution It is impossible to see what professional or economic advantages the scheme offers to public, profession, or science —I am, Sir, yours faithfully,

Dec. 28th 1936 BRISTOLIAN

ON WRITING FOR "THE LANCET"

To the Editor of THE LANCET

SIR,—I have been much interested in your supplement of this week (It might be counted as tautology to quote the title) If a humble reader, and occasional writer (this comes under the paragraph "Modesty") may be allowed to criticise, I think it is excellent in idea, but perhaps unduly severe on the use of certain words In my "opinion" theory is a most excellent word and difficult to replace However, that is only my "idea" A more serious criticism is your suggestion of the use of the word "disease" instead of "pathology," which is by no means a synonym The word pathology means the science of the causation of any given disease as illustrated by all the facts of morbid anatomy treatment &c

Your list of abbreviations for the titles of papers I am sure will be very useful, and I shall keep it carefully by me but what has the *Archives of Neurology and Psychiatry* (Chicago) done to be excluded ? Is its mere youth (18 years) the only reason ?

I am Sir yours faithfully

Wimpole-street W Jan 1st. WILFRED HARRIS

*** We agree with Dr Harris that the words are excellent in their place but some of them are certainly overworked and some as certainly misused '—— put forward the theory that the spleen was diseased is a bad way of describing his opinions and Dr Harris will share our horror at ——s discovery that the spleen showed no pathology The alternatives suggested are by no means always synonyms, but they will sometimes be preferable Our omission of the *Archives* from the list was accidental but at best the selection is a small one chiefly intended to illustrate the various kinds of abbreviation used —ED L

OBITUARY

SIR GRAFTON ELLIOT SMITH M D Sydney, F R C P Lond F R S

WE regret to record the death of the distinguished anthropologist Sir Grafton Elliot Smith which occurred on Jan 1st at Broadstairs For a long period he had been in delicate health

Grafton Elliot Smith was born at Grafton New South Wales in 1871 son of the head master of a large State school in Sydney He was educated there and at the University of Sydney which he entered at the age of 17 as a student of medicine As a schoolboy his high qualities were recognised and he came at once under the notice of Prof J T Wilson then professor of anatomy at Sydney who chose him as a prosector in the anatomy classes where he displayed his proficiency in the technique of dissection He won the John Harris scholarship and graduated as M.D with honours in 1895 The University of Sydney at that period was fortunate in the personnel of its staff and contact with such teachers as Almroth Wright and C J Martin accounted for much in Elliot Smith s early scientific development Aided by a travelling scholarship he came to England in 1896 and through the influence of Donald MacAlister was admitted as a member of St John s College Cambridge

SIR GRAFTON ELLIOT SMITH

[Photograph by Elliott & Fry

He was again fortunate in his association with co workers for at Cambridge Hugh Anderson J N Langley and Gaskell were eminently fitted to advise and encourage him During three strenuous years Elliot Smith s output of work included valuable researches on the comparative anatomy and morphology of the brain In recognition of these he was elected a fellow of St John s and in 1900 was invited to become the first occupant of the chair of anatomy in the Government medical school at Cairo In his new sphere while pursuing his anatomical work he became almost perforce an anthropologist For during his nine years stay in Egypt he conducted graveside investigations with archæologists who working with the best scientific methods provided him with an accurate dating of all the material that he handled He was appointed to supervise the anthropological survey of Nubia and examined a vast series of bodies representative of all periods of Egyptian history He was able to ascertain with astonishing detail the life history of the inhabitants of the Nile Valley 6000 years and more ago while he described the royal mummies for the general catalogue of the Cairo Museum In 1907 he was elected F R S and in 1909 was appointed professor of anatomy at the University of Manchester

From Manchester while continuing researches into cerebral physiology he published the outcome of certain of his anthropological work In 1915 there appeared a short work on mummification in which he formed from the geographical distribution of the practice his interesting theories on the migration of peoples and the spread of customs and beliefs He had followed up in his labours the evolution of tomb-building which culminated in the pyramids and he now traced the influence of Asia in the megalithic monuments of other parts of the world The result was the conclusion that the principles of architecture had been handed on to nation after nation by human missionaries a conclusion which involved him in an interesting dispute with American archæologists as set out in Elephants and Ethnologists a quarto volume excellently illustrated and published in 19?4 Here Elliot Smith deals with certain decorative sculpture found in Honduras whose artistic origin would seem to have been Asiatic for elephants played a large part in the ornamentation and there are no records of elephants in America But among certain learned men in America there was reluctance to believe that the early civilisation in their country had derived anything from Asia and Elliot Smith s book records an amusing interchange of personal views honours remaining with Elliot Smith For it is more probable that adventurous voyagers pushing east from Asia should have carried with them little specimens of household gods in which the elephant figured than that prehistoric Americans should have invented for the ornamentation of their early architecture an animal of whose existence they could not have known

Elliot Smith was for ten years professor of anatomy at Manchester We have received from Prof J [illegible] Stopford F R.S vice-chancellor of the University the following estimate which explains the great position which his late colleague enjoyed alike as worker and teacher

The passing of Sir Grafton Elliot Smith [illegible] from our midst a man of quite outstanding [illegible] who has made history in the fields of [illegible] and anthropology It was my good fortune to come under his influence at the outset of my career [illegible] and for seven happy years he was my [illegible] How well I remember my feeling of hopelessness and utter bewilderment when I first observed his inimitable methods of doing original work For days, sometimes weeks, he would delay making a start and appear to dip almost aimlessly into the literature and, as we described it, 'potter about' Then one day material from all parts of the department would be brought, quick dissections made, a few histological sections prepared, and within an incredibly short time the solution of the problem would be clearly exposed and explained. In spite of the long latent period at the start we all agreed that when once he got to work Elliot Smith could do more in three days than most of us could do in three months He was equally rapid when preparing his results for publication, and his style and method of presentation were an example never to be forgotten

"He attracted many research workers from other schools at home and abroad, and great was the disappointment of those who imagined that he would do the work for them Having suggested a line of investigation he appeared to take no further interest until some results had been obtained, but then his generous praise and encouragement were often out of proportion to the work accomplished Quick to grasp the meaning and significance of an observation, the master frequently advanced an interpretation which would never have been appreciated by the worker himself. His power to recognise at once the significance of a fact was unique and in my experience unequalled When the papers came to be written Elliot Smith never expressed criticism of the draft, but would take it home to 'polish it up' This process consisted of almost rewriting the text, and the original author might not be able to recognise his paper, but he would have no difficulty in appreciating what the unexpressed view of the original draft must have been

"Elliot Smith probably did more than any other person to reform the teaching of anatomy, and the younger anatomists are immeasurably indebted to him for his leadership and inspiration More clearly than anyone he saw the need for drastic changes, which were long overdue, and it is fortunate for British anatomy that he was provided with the opportunity of carrying them through in the institute which he planned and directed so successfully at University College In years to come it may well be that his influence upon the teaching of anatomy will be regarded as great and as valuable a contribution as his researches in neurology and the origin of man, which are so well known No one can replace such an outstanding figure, but the men he has trained can keep alive and foster the spirit which he created, and it is much to be hoped that this may be the way we should provide a permanent memorial to one to whom we owe so much"

In 1919, as indicated above, Prof Elliot Smith was appointed to the chair of anatomy at University College, London, in succession to Sir George Thane, and continued to display the fine qualities for the post already indicated During his tenure of the chair at University College it became possible, through support from the Rockefeller Foundation, to plan and build a new institute of anatomy where research workers came in large numbers to work, and as a result the professor's influence as trainer and teacher became pre eminent, and at various times he was invited to lecture in most of the principal centres of learning in Europe and America In 1919 he delivered the Croonian lecture at the Royal College of Physicians of London on the significance of the cerebral cortex from which his contributions to our understanding of cranial characters could be gathered. While he was at University College the discovery of the "London" skull occurred, when the examination and description of the relic was undertaken by him The problem of assessing the racial affinities of the skull was rendered particularly difficult because only its hinder two thirds were preserved, but from the part remaining Elliot Smith was able to demonstrate a strange mixture of characters, finding the bone of a London woman approaching those of the Neanderthal type He held the likeness to be so real as to raise considerations which were dealt with in detail by Sir Arthur Keith in "New Discoveries Relating to the Antiquity of Man" This work is mentioned as one example of the learned contributions to anthropology which came regularly from him, to enumerate these in detail is not possible here, and reference must be made to his books

Honours came rightly to him He was a medallist of the Royal Society, and received honorary degrees from many universities, he was a prizeman of the Anthropological Society of Paris, and an honorary member of anthropological societies in France, Germany, and Italy He was knighted in 1934.

Sir Grafton Elliot Smith married in 1900 Katherine Macredie, by whom he had three sons

ROBERT FRASER CALDER LEITH, M Sc Birm., F R C P Edin

THE death occurred at an advanced age on Dec 14th of the well known bacteriologist, Dr Robert F C. Leith, late professor of pathology and bacteriology in the University of Birmingham Second son of Mr R C Leith, he received his general and scientific education at the University of Edinburgh. Here he graduated in arts with honours, and commenced studying for the Scottish Bar, but determining to enter the medical profession, he graduated as M B, C.M. in 1885 with first class honours After serving resident appointments he was for a time tutor in clinical medicine at the Royal Infirmary, Edinburgh, and in 1892 was appointed pathologist to the institution, a post which he held for five years, being at the same time lecturer in pathology at the school of medicine of the Royal Edinburgh Colleges He made his mark as lecturer and teacher, and confirmed it by numerous papers in medical and scientific journals. He contributed largely to the third edition of Quain's "Dictionary of Medicine," and to the revised edition of the "Encyclopædia Medica," and wrote one of the articles on the stomach in Allbutt and Rolleston's "System" in collaboration with Lauder Brunton. His services were in unusually frequent demand as an examiner, for he discharged this duty at different times at the Royal Colleges of Edinburgh and Glasgow and at the universities of Cambridge, Bristol, and Sheffield In 1899 he was appointed professor of pathology and bacteriology at Birmingham, being at the time assistant physician at the Royal Infirmary, Edinburgh He filled the chair at Birmingham for over twenty years, and was successful alike as teacher and colleague For the past fifteen years he lived in retirement

GEORGE HENRY BURFORD, M D Aberd

Dr Burford, who died on Sunday last at his house in Queen Anne street after a brief illness, was in his eighty first year He graduated in medicine at Aberdeen in 1881, after taking prizes in most subjects and then held resident appointments at the Hospital for Women in Soho square, where he observed a mild form of septic toxæmia occurring after enemata which he reported in our own columns A little later he published valuable observations on the pulse as an indication for exploratory laparotomy in cases of acute traumatic peritonitis Having decided to specialise in gynæcology he became gynæcological physician to the London Homœopathic Hospital and was deeply attached to the homœopathic outlook on medicine He was president of the British Homœopathic Society in 1901 and later founded the International Homœopathic League Last year he was presented by Sir George Truscott on behalf of his colleagues with a testimonial to mark fifty years of active association with homœopathy

HARRINGTON SAINSBURY, O B E
M D F.R C P Lond

Dr Harrington Sainsbury who died on Dec 29th in London in sequence to an operation was a well known consulting physician and worker in cardiology He was born in 1853 received his early education mainly on the Continent and joined the medical school at University College Hospital in 1875 He graduated as M.B with *honours in* forensic medicine at the University of London in 1879 and proceeded in the following year to the M D degree He acted for a time as house physician at Pendlebury Manchester and as clinical assistant at the Great Ormond street Children s Hospital and was then appointed to the staff of the Royal Free Hospital. In hospital and private practice he devoted himself particularly to cardiac diseases and to the constitutional action of many pharmaceutical remedies His pharmaceutical work started as far back as 1882 when he wrote in connexion with Sidney Ringer on the action of salts of potash soda and ammonia on the ventricle of the frog while later he contributed to Ringer s well known Handbook of Therapeutics He was for a time physician to the City of London Hospital for Diseases of the Chest Victoria Park and acted also as examining physician to Ventnor Hospital for Consumption He wrote considerably papers from him being published at different times in the *British Medical Journal The Lancet Folia Therapeutica* and the *Transactions* of the Medical and Chirurgical Society But Sainsbury revealed himself more completely in two small text books. Drugs and the Drug Habit " published in 1906 set out in popular language the theories underlying medical treatment by drugs and was addressed rather to a lay public Principia Therapeutica three years later was addressed to the clinicians who even then were in peril of being engulfed in the flood of new remedies ' In scholarly words he breathed life into the materia medica, accompanied the pathologist into the dead house to discuss them and enjoined respect for the many and various ' imponderabilia Some fifteen years ago there came from him a discussion of certain problems concerning the normal circulatory mechanism which displayed him as an able anatomist while several works of a popular and romantic character were due to his pen

DR. SAINSBURY

[Photograph by Elliott & Fry

We have received the following tribute from Dr J W Carr —

Sainsbury and I were colleagues for 20 years at the Royal Free Hospital and the better I got to know him the more I learned to respect and esteem him, for he was essentially a man who wanted knowing intimately He was so quiet and shy so retiring and self-effacing that it was only on close acquaintance that one realised his true worth. As a physician he was sound and thorough sparing no pains to reach a correct diagnosis and to do the utmost possible for his patients. In that great testing chamber the post mortem room his diagnoses were usually proved to be not only accurate but thoroughly well worked out

So quiet and reserved was he that only by experience did one learn that his convictions based on careful observation and deduction were held tenaciously and firmly Religion to him was a very real thing and as his personal character was of the highest it was impossible to conceive of his doing or saying anything underhand or mean Everything he undertook was carried out absolutely conscientiously to the smallest detail This characteristic was reflected in his writings for he wrote most polished English so that his meaning was always clear and perfectly expressed Naturally he was trusted and beloved by his patients whilst to his students he was always the courteous gentleman most ready to answer any questions they might put to him The world is the poorer for his passing for men of his type—quiet, unselfish, unassertive unpushful, but thorough, accurate painstaking and meticulously scrupulous in every detail of daily life are indeed rare and often not sufficiently appreciated in a world in which self-assertion is only too frequently taken at its face value

ROBERT WILLIAMS M.B Edin

THE death occurred on Dec 27th of Dr Robert Williams who had a lifelong association with the town of Leominster and the district He was 87 years of age and died at Kingsland where he was born as were two generations of his ancestors He was educated at the Hereford Cathedral School, and having graduated in medicine at the University of Edinburgh in 1874 took up the family practice at Leominster and was for 50 years medical officer of health for the borough only ceasing to practise some ten years ago We owe to one of his oldest friends the following note : Dr Williams was essentially a countryman He had lived in his native village of Kingsland since his school days and during all his long life he identified himself with the life of the neighbourhood Foremost in promoting anything that might be of material benefit to his neighbours especially the children he helped to raise funds for many worthy objects in the village by a long series of amateur play productions extending over 20 years He was particularly keen on the natural history of Herefordshire and had an unusual knowledge of birds and their habits. His collection of birds' eggs was valued at several hundred pounds His many friends in Herefordshire and elsewhere will miss genial 'Dr Bob', especially will he be missed in the charming village of Kingsland"

GEORGE McWILLIAMS HENRY, M R C S Eng

The death occurred on Christmas Day in his 80th year of Dr George McWilliams Henry, who was for many years in practice at Halifax He was born in Co Tyrone, and was educated at the Heath Grammar School and University College, London On qualification he went to Halifax, where he had previously resided as a boy with an uncle, and during the next quarter of a century became one of the best known medical men in the district Dr McWilliams Henry, surgeon to the Halifax Infirmary, is his son, and father and son were in partnership until the retirement of the senior member of the firm in 1923 Dr George McWilliams Henry married a daughter of the late Mr John Crossley of Hopwood Hall, Halifax, and celebrated his golden wedding in 1932 After retirement from practice he went to live at St Anne's-on Sea, where he died

JOHN WILKINSON, M D Edin, D P H

Dr John Wilkinson, who died on Dec 17th at his house in Droitwich, was the senior medical man in the borough, where he had been M O H for over thirty years Born in Dublin in 1863, he was educated at Birkenhead, and received his medical training at King's College Hospital, London. He graduated at Edinburgh in 1886 and was demonstrator of bacteriology in the medical school at King's Later he was for a time resident medical officer at an institution in Bath, but in 1900 he joined the late Dr P A Roden in practice at Droitwich, remaining later in partnership with Dr K S Roden until he retired in 1935 Dr Wilkinson was a sound practitioner and popular with his patients, into whose general troubles he seemed particularly able to enter while giving medical counsel. He was twice married, and leaves a widow and a daughter, the child of his first wife

PANEL AND CONTRACT PRACTICE

The Insurance Medical Service

In the annual report of the chief medical officer of the Ministry of Health, insurance practitioners will be particularly interested in the five pages headed "The Insurance Medical Service" Sir Arthur MacNalty points out that not only the insured persons and their employers but the State also is closely concerned in preventing avoidable disability by the early diagnosis and treatment of incapacitating disease among the workpeople, because from the point of view of preventive medicine the free access of close upon sixteen million insured persons to medical advice provides the best opportunity for the early detection and notification of those infectious conditions that are a direct menace to the nation's health The insurance medical service rightly, therefore, takes its place as one of the most effective branches of the public health service The smoothness of working of this vast scheme may be regarded as generally recognised On a conservative estimate in each year eight million insured persons seek medical advice and over fifty million attendances are given by doctors In these circumstances it is remarkable that during 1935 it was found necessary to investigate only 157 complaints, no more than 48 of which justified the imposition of a penalty This is negative evidence, but from competent observers there is also ample positive testimony to the success of the service

Sir Arthur remarks that the vast majority of insurance practitioners interpret the terms of their contract in no niggardly spirit and, undoubtedly, the standard of the service they give is yearly rising with fresh advances in diagnosis and treatment He comments on the steadily growing interest shown by practitioners in post graduate courses and expresses the opinion that perhaps nothing else is so important in the maintenance of a high standard of clinical work

Cost of Prescribing

The returns for 1935 show that the already very high expenditure of prescribing for insured persons has risen in the year by 1*d* per head of the insured population in England and by 1½*d* in Wales representing an increase of about £70,000 Analysis of the returns shows that, while part of this was due to the prescribing of the more costly modern preparations much the larger proportion was due to the issue of a greater number of prescriptions There are no known facts about the incidence of disease in the country that would account for this substantial increase in the amount of medicine consumed by the insured population

The sum of 35*d* per head is provided to defray the annual cost of medicines and appliances, and in more than half of all areas of the country during 1935 this amount was not exceeded In 59 areas, however, it was exceeded and in some cases very *considerably* Manchester and Salford were again outstandingly the areas of greatest expenditure, the cost being, respectively, 54 7*d* and 55 6*d* A few of the reasonably comparable industrial areas in other parts of the country which were able to provide necessary medicines for their insured population at *very much less cost* were Middlesbrough (27 8*d*), Darlington (28 0*d*), Barnsley (28 4*d*), Dewsbury (28 6*d*) and Walsall (30 3*d*) The average expenditure per head for the country as a whole was 3*s* 1*d* and the total sum expended was £2,237,400 The report goes on to say that if it could reasonably be contended that *to spend* such a sum on medicines is necessary or desirable in the best interests of health there would of course be nothing to criticise It is believed, however, that no body of well informed medical opinion would support such a contention. On the contrary, it has been repeatedly stated by representative *practitioners* that a very large *proportion* of the present physicking of the population is wholly unnecessary and that if all doctors felt themselves free to order only such medicinal treatment as in their unfettered professional judgment was considered necessary there would at once be a spectacular fall in the total *cost of prescribing* The practitioner of the old school had a remarkable knowledge of the right use of drugs, which many of the modern practitioners with all their instruments of precision for diagnosis still need to acquire, but intelligent prescribing is very different from plural or poly-pharmacy, and insurance *practitioners* should give thought to their responsibility in this matter

PUBLIC HEALTH

INFLUENZA

THE year has opened with the worst example we have had since 1933 of the extent to which even a minor epidemic of influenza can upset the orderly working of a civilised community Fortunately there is good reason to hope that the infection will remain of a relatively mild type

The epidemic of 1933 was at about the same season In the last week of November 1932, only 33 deaths were attributed to influenza in the Great Towns by the last week of the year this number had increased nearly *tenfold to 303 and the figure continued* to rise until the end of January 1933 when it reached a weekly total of nearly 2000 deaths Thereafter the epidemic as measured by deaths, declined fairly rapidly In the present epidemic there has so far been no mortality on a comparable scale The number of deaths from influenza recorded in the Great Towns in the four weeks ending Dec 26th 1936 were 43 54 57 and 97 There was, it will be observed a fairly considerable rise in the last week of the year but the figure of 97 is not substantially above those recorded at the end of 1935 and 1933 and is below that of the first week of 1934 In each of those years influenza mortality subsequently reached no very high level. Moreover in the last eight weeks of 1936 the notifications of primary pneumonia were well below the level normal for that time of year

Of the 97 deaths from influenza reported in the week ended Dec. 26th 1936 25 occurred in London and 51 in Greater London. Outside London the number of deaths in diminishing order was as follows: Birmingham 7 Hendon and Manchester each 4 Northampton and Cardiff each 3 Croydon *Dagenham Ealing East Ham* Bolton, Doncaster Wigan Bristol Ipswich each 2 Barking Harrow Hornsey Mitcham Walthamstow West Ham Brighton Eastbourne Oxford, Barrow in Furness Blackburn, Blackpool Burnley Bury Hull, Leeds, Liverpool, Middlesbrough Rotherham, Salford Stockport Stockton-on Tees Wallasey Cheltenham Leicester Newcastle under Lyme Nottingham, Smethwick, Stoke-on Trent West Bromwich, Cambridge Plymouth Newport each 1

All classes of the community have been affected and many large establishments in London and Midland *towns report* 10 to 15 per cent. of their employees absent through illness. The incidence on certain occupations has produced the greatest dislocation Hospital nurses generally have been attacked in a degree corresponding to their exposure to infection and their inability to avoid it (but other key industries such as *operatic singing and professional* football have also suffered much and given rise to more press comment). Private nurses have been in great request and the supply has in places not been equal to the demand

TREATMENT

The Ministry of Health has issued a statement on what the individual can do to avoid falling a victim to the disease The public are encouraged to see that rooms are well ventilated and airy but not draughty and to take nourishing food and it is added it is often a good thing to take cod liver oil as well Avoidance of needless exposure avoidance of crowded places and the regular use of a gargle of dilute compound glycerin of thymol, or just enough permanganate of potash to give the gargle a pink colour are also recommended Special emphasis is laid on the need to place discarded handkerchiefs in a disinfectant solution and for persons in contact with patients to wash their hands at once after contact with the victim or with infected mucus. This common-sense statement has been widely distributed by the daily press and can hardly be without effect on the propagation of the epidemic Newspapers are also doing their part in driving home the lesson that people who insist in carrying on with their work when they should be in bed are not public heroes but public menaces

THE SITUATION IN LONDON

In London the south western area it seems has suffered more than other parts especially Paddington Chelsea and Putney it is suggested not unplausibly that infection was widely spread from large shopping centres. Islington suffered later but Bethnal Green is said still to be relatively free

Some examples may be given of the way in which the epidemic has affected the *hospital system in London* The information refers to Wednesday morning last At *St Bart's* 68 members of the staff were down *50 nursing 3 clerical 2 resident medical,* 4 works department and 9 porters (Epidemic of mild type and now declining average duration 6 days with 3 days of fever)—At *Guy's* a special ward (25) has been set aside for nurses but only one or two of the regular staff are affected (Average duration a fortnight no complications and indications that the wave is abating)—At the *Middlesex* 54 nurses have been ill and about 6 of the rest of staff (Average duration a fortnight; epidemic now abating)—At the *London* large numbers of the staff including the resident medical, are down The type is mild the duration 6–7 days and the peak seems now to have been reached —At the *Westminster* 25 nurses are ill and all the private nursing staff has been called out—which is unprecedented The rest of the staff are not affected (Influenza of mild type; duration one week; wave decreasing in intensity)—At *St Thomas's* 43 nurses out of 200 are off duty and 34 out of the 100 of the rest of the staff (Average duration 6–7 days; epidemic thought to have reached its peak.)

In the *L C C general hospitals* which normally admit *influenza cases there were on Saturday last* 18 000 occupied beds the largest number of patients these hospitals have ever had under their care at one time; but this does not necessarily imply an increased amount of illness for they are now better equipped than they have ever been to give the public the attention it wants. But as the general hospitals were so full already they were unable to cope with an epidemic of influenza On Saturday they had admitted 1010 cases of influenza and could take no more This year however there is little measles and the *special hospitals* for infectious diseases being fairly empty it was decided to set aside wards in them for influenza cases In 7 of the 9 special hospitals 500 beds have been allocated and 420 have now been filled More beds can be found but there is difficulty in finding the nurses As there was no epidemic of any infectious disease the fever hospitals were not being run on a full staff and some of the nursing and medical staff are themselves down with influenza Cases are however still being admitted on the application of any medical practitioner who reports a case which he wants to have removed to hospital The ambulance is instructed first to try the nearest general hospital and if it is full to go on to one of the special hospitals It is presumed that the pressure may decrease towards the end of the month.

The proportion of men to women victims in L C C hospitals is 40 to 60 For the most part the cases are of mild type, but in a fair number pneumonia has developed and these are being nursed in oxygen tents As a rule the acute illness lasts for 3–4 days, though there is a good deal of prostration afterwards, with rise of temperature to 101° or 102° F, irritable throat, cough, severe headache, and lumbar pain

NEWS FROM THE COUNTRY

Information reaching us from places outside London may be briefly summarised as follows —

Brighton —All ages affected Sudden onset, with headache, somatic pains, and cough, fever up to 103° F Duration 10–15 days Complications bronchitis, cervical adenitis, and diarrhœa

Thanet —All ages affected with high swinging temperature, nasal and bronchial catarrh Duration, 4–7 days in adults, longer in children, who may have secondary rise of temperature with otorrhœa

St Albans —Widespread mild influenza with a growing tendency to bronchial attack, two deaths from acute broncho pneumonia At first only elderly people attacked, now generalising Catarrhal subjects seem to escape Acute stage 2–4 days, 2–3 days pyrexia with general inflammation of the upper air passages, and superficial bronchitis, some gastro-enteritis on third and fourth days A few vivid red ear drums Disability for 2 weeks

Devon —Cases mostly among Christmas visitors, nothing that can yet be called an epidemic Symptoms headache or gastro-enteritis or both, tracheitis usual Short duration, average a week

Birmingham —Some 15 nurses off duty at the General Hospital with colds and fever lasting two days, no complications so far In three cases fatal pneumonia has followed similar colds outside

Nottingham —A leading practitioner finds conditions normal for the time of year

Liverpool Plenty of cases about but no true epidemic Symptoms severe headache, generalised pains, tracheitis, and cough No increased incidence of pneumonia. Respiratory mortality normal Sequelæ tiredness and persistent tickling cough

Newcastle upon Tyne —There is nothing that can be called an epidemic of influenza either in the urban practices of the town or in the surrounding rural country the incidence, it seems is not now greater than the normal at this time of year In the few attacks the type has been the short three day fever with muscular pains and no complications In the week ending Jan 2nd six deaths were reported from pneumonia including influenzal pneumonia (average 8 for corresponding weeks in three previous years) There is however in the area a definite epidemic, not common but troublesome, of nausea and vomiting, affecting children more than adults a 24-48 hours' illness with complete recovery, true to type and leaving no respiratory complications

Aberdeen —Epidemic only beginning All ages, children more than usual Duration 5–10 days Some short sharp attacks with pyrexia up to 104° F Younger patients often have nausea, sometimes with vomiting No serious complications

Dublin —A few cases regarded as influenza among adult males, symptoms mainly gastro intestinal No epidemic as yet

The little town of *Caerau* in Glamorgan has been severely hit although its healthy situation has hitherto rendered it immune from epidemics of most kinds School attendance has, it is stated, dropped to 40 per cent.

MEDICAL NEWS

University of London

Six lectures on statistical methods in social and economic investigations will be given by Mr J Neyman, Ph.D, reader in statistics at University College, Gower street, W C, at 7 30 P M on Tuesdays, beginning on Jan 26th Further information may be had from the secretary of the College, and changes in the hour and day of the lectures would be considered if desired by the audience

At recent examinations the following candidates were successful —

M.S

Branch I (Surgery) —John Howkins and J B G Muir (University Medal) Middlesex Hosp and E J Smith King s Coll Hosp

University of Cambridge

Dr J A Ryle, regius professor of physic in the University, has been elected to a professorial fellowship at Gonville and Caius College

Royal Society of Arts

At a meeting of this society to be held at 8 15 P.M on Wednesday, March 10th, at the house of the society, John street Adelphi W C Dr C S Myers F R S, principal of the National Institute of Industrial Research will read a paper on industrial psychology and the modern world

Royal Institution of Great Britain

Mr Julian Huxley, D Sc, will give the first lecture in an illustrated course on films in scientific education which is being given at the institution on Jan 14th, 21st, and 28th at 5 15 P M. He will deal with the use of films in biology On Feb 26th at 9 P M Lord Horder will give the Friday evening discourse, speaking on old diseases and new On March 2nd, 9th, 16th, and 23rd, at 5 15 P M, Prof Edward Mellanby, F.R S, will give four lectures on digestion and indigestion Further particulars may be had from the secretary, 21, Albemarle street, London, W 1

Post-graduate Course on Diseases of the Chest

A post graduate course on diseases of the chest with special reference to chronic pulmonary suppuration has been arranged by the Joint Tuberculosis Council and will be given by the medical and surgical staff of the City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E, from Feb 1st to 6th Further information may be had from the hon secretary for post-graduate courses of the council, 8, Christ Church place, Epsom.

Royal College of Surgeons of England

Next Friday Mr Laurence O'Shaughnessy will give the first of a series of lectures which will be held at the College from Jan 15th to Feb 22nd. He will speak on the treatment of cardiac ischæmia, and Viscount Dawson will give a short opening address The other lectures are as follows Jan 18th, Mr Evelyn Sprawson, odontomes Jan 20th, Dr Russell J Reynolds, movements of the œsophagus, stomach, duodenum, and ileum during the passage of an opaque meal, Jan 22nd, Mr A S Kerr, the higher autonomic control of the hollow viscera, Jan 25th Dr S Zuckerman, tissue specificity in relation to sex hormones, Jan. 27th, Dr Zuckerman, the interrelation of endocrine and neurovascular factors in the menstrual cycle Jan. 29th Mr Cecil P G Wakeley the surgery of the parapituitary region, Feb 1st, Mr Philip Wiles, postural deformities of the spine, Feb 3rd, Mrs Philippa Martin, the effect on the eye of radium used for treatment of malignant disease in the neighbourhood, Feb 5th Mr J H Saint the BIPP method of treatment of acute osteitis Feb 8th, Mr A R D Pattison Cushing's syndrome Feb 10th, Mr D W C Northfield, headache Feb 12th, Mr F H Bentley, experimental nerve anastomosis, Feb 15th, Prof G E Gask, John Hunter in the campaign in Portugal, 1762-63 and Feb 22nd, Dr David Slome, the nervous factor in traumatic shock

Prof Gask's lecture will be given at 4 P M., all the others at 5 P M

King Edward's Hospital Fund

The King has consented to become patron of King Edward's Hospital Fund for London and has appointed the Duke of Kent its president

Society for Constructive Birth Control

A meeting of this society will be held on Tuesday Jan. 19th at 8 P.M at 26 Portland place W 1 when Dr C W Saleeby will give a lecture entitled A Plea for Summer Babies

Nichols Fellowship

Applications are invited by the Royal Society of Medicine for this fellowship which is offered for research relating to the causes and prevention of death in childbirth from septicaemia Further particulars will be found in our advertisement columns.

Course on Mental Deficiency

A course of lectures and clinical instruction for medical practitioners on mental deficiency and allied conditions has been arranged by the Extension and Tutorial Classes Council of the University of London in coöperation with the Central Association for Mental Welfare It is intended for qualified medical practitioners who are concerned with the care of subnormal or abnormal persons. The first part of the course will be held from April 12th to 24th and the second part will be given in the autumn Further information may be had from Miss Evelyn Fox, University Extension Department University of London W C 1

Conference on the Accredited Milk Scheme

A conference to discuss the administration of the Milk (Special Designations) Order 1936 with respect to accredited milk, will be held by the Royal Sanitary Institute on Thursday Jan 28th at 2 P.M at 90 Buckingham Palace-road London S W Mr Thomas Baxter chairman of the Milk Marketing Board, will preside and the discussion will be opened by Dr W G Savage medical officer of health for Somerset Mr F W Medlock chief veterinary officer for Essex; Mr H F Long chief sanitary inspector for Hereford; and Mr W T Price agricultural organiser for Wiltshire

Order of St John of Jerusalem

The following promotions in and appointments to the Venerable Order of the Hospital of St John of Jerusalem have been sanctioned by the King —

As Knight—Sir Louis Knuthsen K.C V O O B.E M D Godfrey Martin Huggins F R C S M.P Lieut. Colonel Alexander Robertson Falconer C.B E. V D M B and Sydney Letts Dawkins M B

As Commander—William Douglas Kirkwood, M.D Lieut -Colonel Henry Woolmington Webber M.D F R C.S E. Leonard Erasmus Ellis, M.D Colonel John Arthur Hopkins Sherwin V.D M D Surgeon Vice-Admiral Sir Robert Hall K C B O B E M R C.S and John Newman Morris M B

As Associate Commander—Lieut Colonel Sir Hassan Suhrawardy O B E M D F R.C.S.I

As Officer—Gerald Holroyde M C M R C P Ernest Jones M B Captain Harold Francis Joseph Norrie M.B Robert Vickers Clayton, M B Lieut Colonel Lavell Hall Leeson M.D Lieut Colonel Wilfred Vickers D.S O V.D M.B Colonel Herbert Henry Ernest Russell O B E. M.D F.R C P Henry Smith, M D Captain Robert Marshall M D., Charles Gordon Moore C V O M.B Alexander Gillilan Johnson MacIlwaine C I E., L.R C P I Ian Wynnes MacGregor M B Robert William Magill Strain M D Lieut.-Colonel John Sutherland Matheson M.D., Walter Woodworth White M.D George Ray Johnson M D Lieut -Colonel David Alexander Whitton O B E M.D Colonel Samuel Roy Burston O B E D.S.O V.D M R C.P E. Colonel William Wallace Stewart Johnston D S O M C M D Colonel Harold Clive Dilger M.D Francis Edward McAree M.B., Lieut Colonel John Ralph Donaldson M.B and Miss Margaret Ellen Douglass M D

Vacancies

For further information refer to the advertisement columns

Arlesey Beds Three Counties Hospital—Temp Asst. M O 7 guineas per week

Birmingham City—Res Asst M O £400

Birmingham City Education Committee—Part time Aural Surgeon 2½ gns per session

Birmingham City Mental Hosp—Jun. Asst M O £350

Bolingbroke Hosp Wandsworth Common S W—H P at rate of £120

Bootle General Hosp—H P two H S s also Cas O each at rate of £150

Brighton New Sussex Hosp Windlesham road—H P at rate of £100

Bristol Royal Infirmary—Sen Cas H S and Sen Obstet. H S at rate of £150 and £100 respectively Also Res H P s and H S s to Spec Depts., each at rate of £80

Calcutta All India Institute of Hygiene and Public Health—Director, Rs 1460

Cambridge Addenbrooke's Hosp—Res. Anaesthetist and Emergency Officer at rate of £130

Canterbury Kent and Canterbury Hosp—Hon. Radiologist

Cape Town University—Jacobus Stephanus Marais Memorial Post-graduate Scholarship, £150

Cardiff Royal Infirmary and Welsh National School of Medicine.—Hon. Dermatologist and M O for Male V D Centre at rate of £350

Carshalton Queen Mary's Hosp for Children.—Res. Med Supt £1400

Cheshire Joint Sanatorium, Market Drayton.—Res. M O., £350

Chesterfield and North Derbyshire Royal Hosp—H S to Ophth and Ear Nose, and Throat Depts at rate of £150

Dewsbury and District General Infirmary—Sen and Second H S s, £200 and £150 respectively

Doncaster Royal Infirmary and Dispensary—Res Surg O and Cas H S., £250 and £175 respectively Also Res. Anaesthetist at rate of £175

Ealing Borough—Res Asst M O £350

Eastbourne Princess Alice Hosp—Res H S £150

Edinburgh, National Association for the Prevention of Tuberculosis.—Secretary-General in London £600

Enfield Urban District Council—Deputy M O H and Asst School M.O., £600

Evelina Hosp for Sick Children Southwark S.E—H P at rate of £150

French Hospital and Dispensary 172 Shaftesbury-avenue W.C—Hon Gynaecologist

Golden-square Throat Nose and Ear Hospital W.—H S £100

Grimsby and District Hosp.—Sen H.S. and H P at rate of £200 and £150 respectively

Halifax Royal Infirmary—Third H S at rate of £150

Hampstead General and North West London Hospital Haverstock Hill N W—H P at rate of £100

Hastings Royal East Sussex Hosp—Jun. H S. at rate of £150

Hospital for Epilepsy and Paralysis Maida Vale W—Hon Psychiatrist.

Hosp for Tropical Diseases Gordon-street W C—Res Med Supt. £400

Hull Municipal Maternity Home and Infants Hosp—Jun. Res M O., at rate of £100

Inverness Royal Northern Infirmary—Hon. Visiting Surgeon to Ear Nose and Throat Dept

Laboratories of Pathology and Public Health—Jun. Asst Pathologist, £500

Leamington Spa Warneford General Hospital.—H P at rate of £150

Leeds University School of Medicine—Readership in Surgery and Reader in Medicine each £600

Leicester Royal Infirmary—Hon. Dental Surgeon and two Hon Asst. Dental Surgeon

London County Council—Asst M O Grade I £350 Asst M O Grade II £250 Also Temp Part time Asst M O s 30s a session.

London Hospital E—Surg First Asst and Reg, £300

Maidstone, West Kent General Hospital.—H S £175

Manchester, Ancoats Hospital—H S at rate of £100 Also Asst Surg O 10s 6d per attendance

Manchester, Booth Hall Hospital—Res Asst M O., at rate of £200

Manchester City—Air-raid Precautions Medical Examiner 1 guinea each examination

Manchester, Duchess of York Hospital for Babies—Asst Anaesthetist half-guinea per session.

Manchester Hospital for Consumption and Diseases of the Throat and Chest—Asst M O for Crossley Sanatorium at rate of £300 Also Res M O for St Anne's Home £200

Manchester Monsall Hosp. for Infectious Diseases—Res Asst M O £350

Manchester Northern Hospital Cheetham Hill road—Res H P and Res H S each at rate of £100

Manchester Withington Hospital—Cons Obstet and Gynaecologist at rate of £300

Metropolitan Hosp Kingsland-road E—Cas O and Res Anaesthetist £100

National Temperance Hosp Hampstead-road N W—Med Reg 40 gn

New Zealand Dunedin Hosp—Radio Therapist £1000

New Zealand Palmerston North Hosp—Pathologist £700

Northumberland County Council—Asst County M O H £[illegible]

Oxford University—Nuffield Professorship of Obstet and Gyn £2000 Also Nuffield Professorship of Clinical Medicine £2000

Pembroke County War Memorial Hosp Haverfordwest—Res M O £150

Plymouth Prince of Wales s Hosp Devonport —Jun H.S at rate of £120

Plymouth Prince of Wales s Hosp Greenbank road —H.S , at rate of £120

Queen Charlotte s Maternity Hosp Marylebone road N W —Asst to Pædiatrician and M O to Infant Consultation Centre 1¼ gns per clinic

Rhondda Urban District Council —Asst M O £500

Royal Cancer Hosp , Fulham road, S W —Res M O £200

Royal National Orthopædic Hosp , 234 Great Portland street, W —Two H S s for Country Branch each at rate of £150

Royal Society of Medicine 1 Wimpole street W —Nichols Fellowship £150

St Albans Hill End Hospital for Mental and Nervous Disorders —Two H P s each at rate of £105

Sheffield Winter street Hospital —Asst Tuber O £350

South London Hosp for Women, Clapham Common, S W —Out patient M O and H S each at rate of £100 Surg Reg Also Clin Assts to Surg Out patients

Stoke-on Trent Stanfield Sanatorium —Res M O £350

Straits Settlements Singapore Municipality —Asst Municipal Health Officer, $8400

Victoria Hospital for Children Tite street, Chelsea S W —Cas O at rate of £200 Also H P and H S , each at rate of £100

West End Hospital for Nervous Diseases 73 Welbeck street W —Two Res H P s each £125

Westminster Hospital Broad Sanctuary S W —Asst Surgeon

Wigan Royal Albert Edward Infirmary and Dispensary —H S at rate of £150

Wolverhampton Royal Hosp —Res X Ray and Radium Registrar Also Asst Res M O for Gyn and Obstet Dept at rate of £100

Worcester County and City Mental Hosp , Powick —Asst M O , £350

Worthing Hospital —Hon Anæsthetist

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Bourne (Lincs) Bromsgrove (Worcestershire) Gillingham (Dorset) and Cranbrook (Kent)

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning

SOCIETIES

ROYAL SOCIETY OF MEDICINE 1, Wimpole street W

TUESDAY Jan 12th

Therapeutics and Pharmacology 4 30 P M Special Meeting 5 P M Dr Hagedorn (Copenhagen) Protamine Insulinate Dr O Leyton will also speak

Psychiatry 8 30 P M Dr R G McInnes Observations on Heredity in Neurosis

WEDNESDAY

History of Medicine 5 P M Dr Martin Spink Gynæcological Obstetrical and Genito urinary Instruments and Practice under the Arabian Empire

FRIDAY

Physical Medicine 5 P M Dr G D Kersley Peripheral Circulation in Chronic Rheumatism

Obstetrics and Gynæcology 8 P M Mr W Gilliatt and Mr J Bright Banister Relative Values of the Upper and Lower Segment Cæsarean Operations Mr V B Green Armytage and Mr Aleck Bourne will also speak

Radiology 8 15 P M Dr James Brailsford Dr R W Scarff and Mr W H Ogilvie Bone Tumours

MEDICAL SOCIETY OF LONDON, 11 Chandos street W

MONDAY Jan 11th —8 P M pathological evening

HARVEIAN SOCIETY OF LONDON

THURSDAY Jan 14th —8 30 P M (26 Portland place W) Annual General Meeting

NORTH LONDON MEDICAL AND CHIRURGICAL SOCIETY

THURSDAY Jan 14th —9 15 P M (Royal Northern Hospital, Holloway road) Dr F W Price Observations on Diagnosis and Treatment in Heart Disease including a Reference to Childbearing

SOUTH WEST LONDON MEDICAL SOCIETY

WEDNESDAY Jan 13th —9 P M (Bolingbroke Hospital Bolingbroke grove S W) Mr R Hodgson Boggon When to Operate

LONDON JEWISH HOSPITAL MEDICAL SOCIETY Stepney Green E

THURSDAY Jan 14th —3 30 P M Dr Andrew Topping Dr Maurice Mitman and Dr J M McCartney Modern Aspects of the Prevention and Treatment of Infectious Fevers

SOCIETY FOR THE STUDY OF INEBRIETY

TUESDAY Jan 12th —4 P M (11 Chandos street W) Dr H M Vernon Alcohol and Motor Accidents

BRITISH INSTITUTE OF RADIOLOGY 32 Welbeck street W

THURSDAY Jan 14th —8 P.M Dr H W Davies Cerebral Arteriography

BIOCHEMICAL SOCIETY

FRIDAY Jan 15th —3 30 P.M (St Mary s Hospital Medical School) Short Communications and Demonstrations

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS Lincoln s Inn Fields W C

FRIDAY Jan 15th —5 P M Mr Laurence O Shaughnessy Treatment of Cardiac Ischæmia (Introductory address by Lord Dawson)

WEST LONDON HOSPITAL POST GRADUATE COLLEGE, Hammersmith W

MONDAY Jan 11th —10 A M skin clinic 11 A M. surgical wards 2 P M operations surgical and gynæcological wards medical surgical, and gynæcological clinics 4 15 P M Mr Green Armytage Sterile Mating

TUESDAY —10 A M medical wards 11 A M surgical wards 2 P M operations medical surgical and throat clinics 4 15 P M Mr Simpson-Smith Acute Abdominal Injuries

WEDNESDAY —10 A M children s ward and clinic. 11 A M., medical wards 2 P M gynæcological operations medical surgical and eye clinics 4 15 P M Dr P Manson Bahr Dysentery and Colitis

THURSDAY —10 A M neurological and gynæcological clinics Noon fracture clinic 2 P M operations medical surgical and genito urinary and eye clinics 4 15 P M Mr Edgley Curnock Aspects of Dentistry of Interest to the General Practitioner

FRIDAY —10 A M medical wards skin clinic. Noon, lecture on treatment 2 P M operations medical, surgical, and throat clinics 4 15 P M Dr Maurice Shaw Medical Examination for Life Assurance

SATURDAY —10 A M children s and surgical clinic 11 A.M. medical wards

The lectures at 4 15 P M are open to all medical practitioners without fee

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION 1 Wimpole-street W

MONDAY Jan 11th to SATURDAY Jan 16th —ST JOHN S HOSPITAL 5 Lisle-street W C , afternoon course in dermatology —NATIONAL TEMPERANCE HOSPITAL, Hampstead road N W Tues 8 30 P M , Mr A J Cokkinis Breast Thurs 8 30 P M Mr A M A Moore Injuries to Bones —NATIONAL HOSPITAL FOR DISEASES OF THE HEART Westmoreland street W, all day course in cardiology (open to non members).—Courses are open only to members of the fellowship

LONDON SCHOOL OF DERMATOLOGY 5 Lisle street W C

TUESDAY Jan 12th —5 P M Dr G B Dowling Pityriasic Dermatitis

WEDNESDAY —5 P M , Dr I Muende Histology

THURSDAY —5 P M Dr W N Goldsmith Pigmentary Disorders

HOSPITAL FOR SICK CHILDREN Great Ormond street W C

THURSDAY, Jan 14th —2 P M Mr James Crooks Acute Infections of the Ear 3 P M Dr A G Signy Present day Uses of Immunisation

Out patient clinics daily at 10 A.M and ward visits at 2 P M

ST JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE Ranelagh road S W

FRIDAY Jan 15th —4 30 P M Dr C A Robinson Pelvic Sepsis in Relation to Rheumatic Disease

CENTRAL LONDON THROAT NOSE AND EAR HOSPITAL Gray's Inn road W C

FRIDAY Jan 15th —4 P M Mr W G Scott Brown Allergy

Births, Marriages, and Deaths

BIRTHS

CAPEL.—On Dec 25th 1936 at the Middlesex Hospital the wife of Dr Ernest H Capel of a son

CARD —On Jan 2nd, the wife of Dr Wilfrid Card of a daughter

GRAHAM POLE —On Dec 25th at High Bickington, North Devon, the wife of Dr Richard M Graham Pole of a daughter

HAVARD —On Dec 28th the wife of Dr R Emlyn Havard Headington Oxford of a daughter

JOHNSON —On Jan 1st the wife of Dr A G Johnson, of Sussex gardens W of a son

JONES —On Dec 31st in Hong Kong the wife of Dr Rhys C Jones Medical Officer of Health of a daughter

MARRIAGES

HOEY—BUDGEN —On Dec 23rd at St John Evangelist Westminster Lieut R A Hoey R A M C to Agnes Joyce Budgen daughter of Mr and Mrs H T Budgen Sanderstead

DEATHS

BALDWIN —On Dec 24th at Cheltenham F B Judge Baldwin M R C S Eng aged 83

CAMERON —On Jan 3rd Gordon Gould Cameron M R C S Eng , of Fulham road S W , aged 35

FRASER HARRIS —On Jan 3rd, David F Fraser Harris M.D. Glasg D.Sc Lond F R.S Edin of Chiswick formerly professor of physiology Dalhousie University Nova Scotia

ROWLAND —On Jan 4th at Pickering Yorkshire Lilb Trousdale Rowland M B B S Lond aged 55

SMALL.—On Dec 31st Francis Victor Small M B Dub , of East Ashling near Chichester aged 39

N B —A fee of 7s 6d is charged for the insertion of Notices of Births Marriages and Deaths

NOTES, COMMENTS, AND ABSTRACTS

THE PATHOLOGY OF THE TOXÆMIAS OF PREGNANCY

A SURVEY*

By Robert Coope M.D B Sc Liverp
M R C P Lond
HON ASSISTANT PHYSICIAN LIVERPOOL ROYAL INFIRMARY
VISITING PHYSICIAN MILL ROAD INFIRMARY LIVERPOOL

Those who have explored the literature of the toxæmias of pregnancy will I think agree that there is hardly a field in medicine which even now presents a more confused and untidy scene Theories classifications speculations galore—one emerges—

> Like one that hath been stunn d
> And is of sense forlorn,

but if at the end of it one is indeed a sadder man it is very unlikely that one rises up a wiser man I wonder if what we are suffering from here is an excess of specialism—(dare I say it ?) that too often obstetricians and biochemists working in the obstetrical field without a large enough background of general medicine get their proportions wrong confuse the issues with a vocabulary of their own and overlook *straightforward diseases just because they occur* in and are modified by pregnancy ? There is only one cure for this confusion—namely to get back to pathology and not be satisfied until names and labels are given a clear pathological content It is true that names and labels may have to be used as stop-gaps even when we are not clear as to their pathological content but they are dangerous because they may easily lull a man into the belief that he knows more than he really does I need only remind you that a word like erythema sounds much more weighty and scientific than red rash

Boswell gives an account of a certain breakfast party in Edinburgh to which Dr Blacklock was invited to meet Samuel Johnson Dr Blacklock spoke of scepticism in religion with apparent uneasiness as if he wished for more certainty the great man in reply encouraged the blind Bard to apply to higher speculations what we all willingly submit to *in common life* Take the case said he of a man who is ill I call two physicians They differ in opinion I am not to lie down and die between them I must do something

Very well then let us see with what we are really faced in this group of illnesses called the toxæmias of pregnancy At the outset we must be careful not to beg the question by assuming the word toxæmia to have an exact defined and constant meaning and it is well to remember that in these diseases no specific toxins have ever been discovered There are those illnesses which occur in the earlier months of pregnancy—morning sickness (we ought to include this for to be sick is not normal) and hyperemesis gravidarum and there are those illnesses which mainly show themselves in the later months—so called albuminuria of pregnancy nephritis eclampsia accidental antepartum hæmorrhage and damage whose main incidence appears to be on the liver—acute and subacute yellow atrophy of the liver We must bring ourselves to be sceptical of many of these as adequately defined clinical entities and try to analyse the pathology behind them

But these illnesses are occurring in a pregnant woman and our analysis is made against the background of pregnancy with its inevitable and insistent facts of a growing ovum a maternal organism subjected to new and searching calls on the normal physiological processes and separating the two a placenta which for all its complexity is in essence a semipermeable membrane between the two blood circulations There is therefore a physiology of pregnancy to be taken into account and as Barnes says Gestation tests the integrity of every structure of the body May I remind you of a few of the important physiological changes in pregnancy which may have a bearing on our subject ? There are alterations in the activity of the maternal ductless glands ; alien proteins may invade the blood-serum (and form a basis for the Abderhalden reaction) and *there is a leucocytosis which Dietrich (1911)* attributes to a reaction on the part of the mother to the ovum and its products There is a large and prolonged call upon building materials and if the mother does not get enough food she will attempt to build up fœtal material from her own tissues The call on maternal calcium may cause decalcification of teeth or even of bones, and the need for iron is great also The liver may lose a good deal of its stored glycogen, and there is evidence from animal experimentation that towards the end of pregnancy there is a physiological fatty infiltration of the liver (Coope and Mottram 1914) Pregnancy involves the adaptation of the maternal organism to a fœtus and though it may not yet be possible to pick out the most vital of the mechanisms of this adaptation it may be that the strain involved is an important factor in the development of these toxæmic illnesses.

MORNING SICKNESS IN EARLY PREGNANCY

The fact that this symptom often occurs before the patient has realised that she may be pregnant suggests that it is not primarily a neurosis as some maintain though anxiety may be a contributory factor The embedding of the ovum is associated with liquefaction of the endometrium by trophoblastic ferments with resulting decomposition products There is no doubt that even in early pregnancy a real disturbance takes place in the maternal organism long before large calls have been made on it for building up the fœtus There are plenty of theories but no proved explanation of what is happening here It is, however suggestive to note that in the presence of an abnormal ovum or of a hydatidiform mole the sickness is apt to be much more severe

If vomiting persists there will be a considerable loss of fluid accompanied or not—usually not—by loss of chloride from the stomach moreover with starvation the liver will lose a large portion of its store of glycogen and ketosis will develop The pregnant woman in any case tends to get carbohydrate starvation and she reacts very much as the child does when attacked by ketosis and dehydration Prolonged starvation of this kind results in a mobilisation of the fat reserves and a fatty infiltration of the liver ; and a fatty liver without glycogen reserves is a liver much more susceptible to the effects of various poisons

So far we are dealing with a vicious circle of vomiting starvation glycogen depletion and dehydration and we find their manifestations in blood and urine—

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* A paper read at a joint ordinary and pathological meeting of the Liverpool Medical Institution on Nov 12th 1936

acetone bodies and a high ammonia ratio in the urine, and a relative increase of non protein nitrogen in the blood If these patients are not properly treated and the carbohydrate deficiency made good they may die, and the post mortem appearances are those of death from starvation

HYPEREMESIS GRAVIDARUM

When the vomiting is severe and persistent enough to be termed pernicious—hyperemesis gravidarum—it may be, as some declare, that the original sickness is being maintained and enhanced by a neurosis, or that adequate treatment of starvation is not being supplied , but in the severest cases—and they are rare—it is clear that profound tissue damage is taking place Where death occurs, post mortem examination reveals not only the evidences of carbohydrate starvation, but actual necrosis of the liver cells, and perhaps scattered hæmorrhages also Here, surely, we are dealing with a condition of hepatic damage in which are involved to a more or less degree the two complementary factors of a liver more liable than normally to cell injury and of some outside poison We have already seen that a glycogen depleted liver is less resistant to poisons, and that pregnancy makes a heavy call upon the body's store of glycogen These facts seem to me to make unnecessary the present day speculation, vague and unproved, that hyperemesis gravidarum is a deficiency disease, due to the insufficient intake of some undefined substance or substances necessary for the maintenance of maternal and fœtal metabolism Is the slight apparent toxic effect of the early ovum upon the mother enough to account for a poisoning lesion in a susceptible liver ? It is difficult to think so, because the condition is so infrequent as to show that in spite of pregnancy the hepatic reserves are usually adequate It is much more likely that the main factor is some outside poison which damages the liver cells, bacterial or chemical , and I suggest that here we ought to think more of the possible causes of hepatitis and less of the pregnancy itself The onset of pernicious vomiting is usually early in pregnancy, in the second or third month , and there is one line of inquiry which perhaps merits more attention than has hitherto been given to it I wonder in how many cases the poison is chemical, from some abortifacient or other ? I recall a patient whom I saw in consultation, three months pregnant, seriously ill, though she did not die , she had hepatitis, with an enlarged tender liver, persistent vomiting, and subicterus She later confessed that she had done her best "by taking things" to procure an abortion The same chemical factor may explain some at least of the cases of acute or subacute yellow atrophy of the liver, seen in the later months of pregnancy Indeed, if it is true as is nowadays suspected, that there is a large amount of attempted termination of pregnancy, it is perhaps surprising that more of these cases do not occur , that they are so rare speaks volumes for the hepatic and renal reserves of even the pregnant woman, making it appear even less likely that the normal ovum produces any very serious "toxins"

To sum up vomiting is a symptom only, even in pregnancy and therefore it would be wise to drop the term hyperemesis gravidarum in favour of more pathologically minded definitions—as for example, carbohydrate depletion neurotic vomiting, hepatitis, and in some cases even in early pregnancy, chronic nephritis To attempt this would at least ensure a constant challenge to exactness of diagnosis

Let us now turn to the "toxæmias" which manifest themselves mainly in the later months of pregnancy Here again there is a widespread lack of agreement on classification and terminology, and one comes across labels such as the kidney of pregnancy, albuminuria of pregnancy, low reserve kidney, albuminuria due to pregnancy, recurrent pregnancy toxæmia, and so on, which remind one of a similar orgy of classification sometimes seen in studies in nephritis I propose to confine what I have to say mainly to albuminuria occurring in pregnancy, nephritis, and eclampsia

ALBUMINURIA

Albuminuria is but a symptom and not a disease entity , but because taken even by itself it is so often a danger signal, routine examination of the urine for albumin sometimes so takes the attention of the practitioner that he may forget to add certain other simple but important investigations—the examination of the urinary deposit, for example, for casts, red blood corpuscles, or pus cells Albumin in the urine may come from admixture with vaginal secretion, from various inflammations or ulcerations of the bladder or ureter or a pyelonephritis, or from damage to the kidney cells themselves, that is to say to the renal barrier between circulating blood and urine, with increase of its permeability either from inflammation, as in nephritis, or deficient oxygen supply, as in congestive heart failure A catheter specimen is therefore always advisable, and if albumin is present, the finding of pus cells, crystals, red blood corpuscles, or casts of various types will help to define what is the underlying lesion Moreover the persistence or disappearance of these various constituents over a proper period of investigation will again throw light upon the nature of the trouble, and reveal whether the obvious damage is temporary or permanent

NEPHRITIS

Nephritis in pregnancy does not differ in essence from nephritis apart from pregnancy, though there are some special considerations in pregnancy which are worthy of mention My own view is that the only really practical classification of nephritis is into the two categories of acute and chronic Whatever the cause, the important fact is the degree of damage to the standing army of approximately ten million nephrons which make up the architecture of the kidneys When sufficient numbers of these units are put out of action, then the remainder may be able to meet normal calls on excretion, but will fail under strain , if more units still are destroyed the survivors will be unable to meet even the minimum of normal demands The damage to the individual nephrons may, of course, be only temporary, or it may be final and permanent , some may be put out of action for a time, yet may live to fight again In any patient, pregnant or otherwise, renal failure may be due to a single attack of acute diffuse nephritis, or to a summation of many less extensive lesions whereby fewer and fewer nephrons are left alive and intact It is common medical experience to find that an apparently sudden attack of acute nephritis is in fact superimposed upon a previously unsuspected yet pathologically quite extensive chronic nephritis or that chronic nephritis of what must be long standing does not become clinically obvious until there is some unwonted strain on the whole organism There seems to be no doubt that pregnancy is one of these strains—indeed someone has called it the acid test of renal function , and as might be expected, increasing age and multiparity predispose to the breakdown of hitherto adequate renal function I do not propose to review here the almost frightening mass of literature on the subject; the curious reader will find an admirable compendium of it in Dame Louise McIlroy's recent book The Toxæmias of Pregnancy' There are two studies however which bear closely on the point I wish to make One is by G F Gibberd (1934) on the relationship of the toxæmias of pregnancy to nephritis in which he sets forth the results of a follow up of cases of albuminuria of pregnancy In it he advances the theory of occult nephritis to explain the recurrent nature of this so called toxæmia in certain patients this nephritis being the result, he thinks and not the cause of the toxæmia; though there seems to me no valid reason why in some cases at least the nephritis should not be occult even before the onset of the first attack of albuminuria

Browne and Dodds (1930) were able to produce just such an occult nephritis in rabbits by the injection of uranium nitrate or sodium oxalate They then observed the animals through a succession of pregnancies. In many of them they noted a recurrent albuminuria of pregnancy appearing in the second half of pregnancy disappearing entirely in the intervals between the pregnancies In these intervals the animals seemed to be normal, and there were no changes in the blood chemistry to suggest any kidney defect Nevertheless their kidneys showed microscopical evidence of actual nephritis all the while then they had a mild degree of chronic renal damage which was exacerbated under the strain of pregnancy and afterwards the animal settled down again to an apparently normal clinical picture But with each attack we must see in imagination more casualties to the already depleted forces of the fundamental renal units Sooner or later as Gibberd's figures indicate these casualties to the nephrons will end in such depletion of the reserves that chronic nephritis becomes clinically obvious If anyone should ask What is the exact mechanism of the damage to the renal units in pregnancy? it might be the better part of valour to reply with a counter question What anyway is the exact mechanism of damage in cases apart from pregnancy? All too often it is impossible to pin down the damaging factor In pregnancy however there is this suggestive fact the longer so called toxæmic albuminuria exists before the uterus empties itself or is emptied of its contents the more likely is the development of a persistent nephritis

In summing up this section I would emphasise the following points damage to the kidneys means for practical purposes damage temporary or permanent to individual nephrons Chronic nephritis whether clinically obvious or not is apt to be made worse by pregnancy though the exact mechanism of this damage is not clear There is evidence that underlying nephritis predisposes not only to death of the fœtus and abortion but also to toxæmias of pregnancy —some cases of eclampsia for example and some cases of accidental antepartum hæmorrhage There is also evidence that the various toxæmias of pregnancy themselves may leave behind a trail of fatally damaged renal units and determine the development of a clinically obvious chronic nephritis

ECLAMPSIA

The theories of the causation of eclampsia are legion; here are some of them auto intoxication toxæmia from fœtal elements or fœtal metabolites or placental products endocrine disturbances faulty diet maternal metabolic disturbances, infections reactions of agglutination or hæmolysis anaphylaxis mammary toxæmias alterations in amniotic fluid We had better turn straightway to the known pathological appearances of patients who die from the disease The liver is pale with scattered red areas of hæmorrhage both in the parenchyma and under the capsule There is often thrombosis of intrahepatic portal vessels with necrosis of the liver cells particularly at the periphery of the lobules. The kidneys also show scattered areas of small hæmorrhagic infarcts with diffuse though usually not severe glomerulitis narrowing of the renal vessels and degenerative changes of varying intensity in the convoluted tubules On the whole the renal changes are mild There may be scattered hæmorrhages and necrosis in the heart muscle and similar patches of hæmorrhage and necrosis in the brain The clue to the picture lies in a widespread capillary injury with consequent thromboses and interstitial blood extravasation and œdema throughout the tissues the necroses which occur in various organs are almost certainly the results of this primary vascular damage

With this pathology in mind recall the more important clinical features of the disease—the raised blood pressure the œdema the convulsions the coma Are we not dealing with a condition analogous to that which in general medicine we recognise as the hypertensive cerebral attack a complication particularly of acute nephritis in young persons or in older patients of raised blood pressure which may be either primary or secondary to chronic nephritis? Volhard (1931) calls this condition acute pseudo uræmia and thinks that eclampsia is a typical example of it. A raised blood pressure is the determining factor with damage and therefore increased permeability of capillary walls and in some cases areas of angiospasm ischæmia and following this diapedesis of red cells through the vessel walls In either case there is œdema localised areas of extravasated blood and in the severest cases consequent cell necrosis from pressure In this way there develop focal lesions in organs like the liver kidney brain and retina Whether eclamptic convulsions are associated with a high or normal non protein nitrogen content of the blood will thus depend on the ætiology cases which complicate an old-standing nephritis will show an increase but it is clear that cases arising as it were de novo may not In confirmation of the vascular basis of eclampsia there are some fascinating observations by Haselhorst and Mylius (1928) They watched the optic fundus in a case of eclampsia from hour to hour and took photographs At first there was intense spasm of the retinal vessels; then as the blood pressure rose hæmorrhages and exudation appeared with œdema of the retina After the uterus was emptied the spasm of the vessels passed off the œdema cleared and the retinal exudate slowly resolved The œdema of the retina may be so abundant that it may as Doggart says push the retina right forward without folds until it looks like a full blown sail but as one might imagine if the above is a correct pathological description the prognosis in this eclamptic detachment of the retina is quite good provided that there is adequate treatment of the eclampsia

What will happen to the liver and the kidneys will depend on the extent of the cell damage and on how long the ischæmia and œdema persist It is clear that there is a serious danger of permanent renal damage even in the cases which recover and there is enough evidence to show that this does in fact happen in a large number of cases

But what precipitates this form of capillary damage and the hypertensive cerebral attack? The fact that primiparæ suffer in the proportion of about 8 to 1 as compared with multiparæ suggests that the majority of the cases are not due to primary or secondary hypertension, but to some acute vascular disturbance with increased permeability of thin-walled and comparatively young vessels Immediately the possible explanation of it as an allergic manifestation comes to mind And I think that it is something more than a groundless speculation For if we turn to the diffuse glomerulonephritis associated with streptococcal infections such as tonsillitis or scarlet fever, there is a considerable time lag between the onset of the infection and the onset of the nephritis, suggesting that the process is not quite as simple or straightforward as might be thought Work which has come from Fahr and his co workers, and from Arnott, Kellar, and Matthew (1936) does bring experimental support to the theory that this form of acute nephritis is an allergic phenomenon, due to an intense antigen antibody reaction in a patient with a streptococcal infection Is eclampsia after all just such an allergic illness? If so, what is the antigen, and whence comes it? Does it come from the fœtal side of that complex separating membrane, the placenta? And, if so, is it because that semipermeable membrane is damaged, and so lets through some substance to which normally it raises an impassable barrier? Once more we find ourselves asking questions which as yet have no answer, but they are questions which have a basis of reason, and therefore they may be asked with some degree of hope

I have said little about biochemistry in this survey, for my view is that the proper interpretation of whatever biochemical findings are made in blood and urine cannot be clear until there is a sound conception of the pathological basis of these various diseases

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THE AMERICAN IDEAL

THESE are times when citizens of the United States and the British Commonwealth should dwell on the aspirations they share rather than on their differences of accent Just as anatomy can sometimes be learnt best through embryology, so the nature of a nation may be more obvious in its history than in the complex body it presents to contemporaries Mr Arthur Bryant has used an embryological approach in his description of "The American Ideal,"[1] for he traces its development by showing how it has been expressed in the past 150 years by eight different men—Jefferson, Lincoln Emerson, Whitman, Theodore Roosevelt Walter Page, Vachel Lindsay, and Alan Seeger "The dream of the plain man seeking bread in the wilderness" as he did in the old days, runs through the history of the States To Jefferson society must be kept as simple and unrestricted as possible to Lincoln government was no office problem but an affair of the man in the street, who must have a fair chance in the race of life The American ideal was born in revolt against the dead hand of custom and privilege, and if the individualism of "the independent farmers and freeholders" to whom Jefferson entrusted the liberties of the future no longer seems a sufficient basis for national life it must at all costs be modified rather than destroyed By *making the reader see and sympathise with the* aims of these great men Mr Bryant demonstrates the importance of the American experiment both yesterday and to day

WORK AND RHYTHM, FOOD AND FATIGUE

THIS is the title of a pleasant little book,[1] consisting of a preface and epilogue and five essays upon Nutrition, Fatigue, Emotion and Stress Rhythm, and Nutritional Adaptations to Stress and Fatigue Each of the subjects is treated in relation to modern life, and the trend of recent research is indicated The author claims no authority either by word or manner, and his interpretations of experimental evidence, if not "cast iron" at least lead to sensible conclusions and are given and must be taken as opinions There is no fanaticism in his ideas about the rhythms of life in general, and its very absence helps to persuade the reader of their importance Neither is there anything militant about his advocacy of various reforms, and one reads with relief that he actually detects some favourable trends in our modern civilisation. Besides being instructive, the book is a plea for the recognition that it is the simple things, like food and rest, which make life worth living—"nutrition is not of bread alone, but rest, rhythm, the absence of din and hurry, and the unpolluted air and waters of unspoilt countrysides are factors in it too"

Appointments

BUTLER E C B M B Lond F R C S Eng has bee appointed Assistant Surgeon to the London Hospital

THOMAS A T M D Durh D P H, Medical Officer of Health for Welwyn Garden City and Hatfield and Welwyn Rural District

London County Council Hospital Staff—The following appoint ments promotions, and transfers are announced A M O (I) and (II) = Assistant Medical Officer Grades I or II Temp D M O = Temporary District Medical Officer

BONNIN J G M B Melb F R C S Eng M C O G A M O (I) St Mary Islington
LATTER ROSALIND B M B Edin M R C P Lond A M O (I), St James
SCHULENBURG BODO M B Cape Town F R C S A M O (I St James
YEATES R A M M B Sydney A M O (I) Fulham
KARRAN C W C M B Camb A M O (II) St Pancras
PELLEW R A A M B A M O (II) Queen Mary s Sidcup
HARRIS R V M B Lond A M O (II), Lewisham,
OVENS G H C M B Lond F R C S Eng A M O (II St James
MELTON GEORGE M D M R C P, A M O (II) Lewisham
BURBRIDGE D H D M R C S Eng House Phys Dulwich,
CLARK D C M B Lond House Physician St Olave s
WILLCOX R R M R C S Eng, House Physician St James,
MYLES T P, B A, M R C S House Physician St James
PATERSON F D M B Lond House Physician St Andrew s
RAYNES R F M R C S Eng, House Surgeon St James
GAULD W R M B Aberd House Surgeon Hackney,
JAMIESON JOHN M B House Surgeon St Mary Abbots
MARK E G L M B Edin, House Surgeon St Mary Abbots
ROLAND HERIOT M B Clinical Assistant St Mary Abbots
THOMSON EMILY S O M B Edin Clinical Assist Fulham

District Medical Officers

AMBROSE, J E M B N U Irel Temp D M O Canonbury,
SHORVON L M M R C S Eng Temp D M O Camberwell and Peckham
GREENFIELD C R M M B Lond D P H Senior A M O (II South Eastern
CAMPBELL, R M M B Aberd Senior A M O (II) Park
BATEMAN LAURA L M B Belf A M O (I) North Easter
WILD MARY H M B Liverp D P H A M O (I) Norther

Certifying Surgeons under the Factory and Workshop Ac Dr J G WARREN (Dartmouth District, Devon) Dr T J EVANS (Morriston District, Glamorgan) Dr A Cr (Oban District Argyll) Dr J E SAVILLE (Whitstab District Kent) Dr C D EVANS (Keynsham Distric Gloucester) Dr H G HOBSON (Market Deeping Distric Lincoln) Dr F A V DENNING (Cricklade District Wilt Dr R G NETHERY (Heckington District Lincoln) Dr J F STENT (Shere District Surrey) and Dr F G H Br (Yealmpton District Devon)

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[1] The American Ideal By Arthur Bryant London Longmans Green and Co Ltd 1936 Pp 259 10s 6d

[1] By E Roland Williams London George Allen and Unw Ltd 1936 Pp [illegible] 2s

ADDRESSES AND ORIGINAL ARTICLES

TUBERCULOUS DISEASE OF THE ABDOMINAL LYMPHATIC GLANDS

BY G H COLT M B B Chir Camb F R C S Eng
CONSULTING SURGEON TO THE ABERDEEN ROYAL INFIRMARY
AND
C N CLARK, M B Aberd F R C S Eng
ACTING MEDICAL DIRECTOR OF THE ANGLO SWISS HOSPITAL, ALEXANDRIA

THIS paper gives the results of an investigation into the symptoms and signs exhibited by patients suffering from the later stages of tuberculous disease of the abdominal lymphatic glands The patients were admitted into a ward in the Aberdeen Royal Infirmary under the care of one of us (G H C) during the ten year period 1923 to 1932 The series is a consecutive one of 239 cases 127 being male and 112 female patients An effort has been made to trace and examine every patient and has been successful in that 207 have been traced and 118 examined.

Caseous Mesenteric Glands

During the ten years 38 patients with caseous mesenteric glands were operated on some of them for unrelated conditions during acute obstruction or for acute appendicitis Of the 50 cases dealt with by the late Mr Carson (1918) 44 were of the caseous variety and 6 calcareous He appeared to be strongly of the opinion that the caseous glands required excision The glands which demand operation therefore are the caseating glands and those alone Many surgeons agree with this because of the danger of complications arising when operation is not undertaken

SYMPTOMS

The duration of symptoms was much less than in the calcareous type being usually stated either in months or weeks rather than in years Abdominal pain was always the first symptom In the majority of patients it was in the right side of the abdomen or in the right iliac fossa There was usually a history of the pain being generalised across the abdomen or peri umbilical initially and later settling in the right iliac fossa but 5 patients had pain in the left side of the abdomen There was occasionally a history of radiation across the abdomen to the other side—mostly from right to left; to the back; to the right leg to the labium (2 cases) and to the shoulder in 1 case There was apparently no relation between exercise and the pain only one patient stating that the pain was worse after exercise; 2 patients were relieved on resting The pain was variously described as sharp shooting stabbing like toothache severe sharp sharp stooning spasmodic dull ache dragging steady and like a stitch In one case the pain was sufficiently severe to double up" the patient The patients with the longer histories had usually had a series of attacks of short duration with an interval of a month or two between them The attacks tended to become more severe and were often accompanied by nausea and vomiting There appeared to be a definite tendency to constipation

PHYSICAL SIGNS

In all cases except one there was some tenderness in the abdomen situated almost invariably in the right iliac fossa Hyperæsthesia and increased tonus of the muscles were uncertain and tended to be present only in the cases complicated by appendicular inflammation A mass was palpable in 8 of the cases In 3 the mass was in the right iliac fossa in 2 in the left iliac fossa in 1 to the right of the umbilicus; and in 1 to the right of the left kidney Lockwood's sign (Colt 1932) which is of great value in the diagnosis of adhesions in the cæcal region was recorded as positive in 4 cases 3 of these had appendices which were adherent to the cæcum by bands the fourth had adhesions of the omentum to the peritoneum of the right iliac fossa Hyperæsthesia over the right lower quadrant was more diffuse and less intense than in appendicitis.

Ketosis —It was noticed that in the great majority of the subacute and acute cases (both caseous and calcareous) the patient's breath smelt strongly of acetone In surgical cases this is often due to excessive vomiting with upset of the carbohydrate metabolism But in the majority of the cases vomiting had been absent or infrequent When subacute it was often possible to decide by the presence of ketosis that the case if not one of intestinal obstruction could be left for medical treatment and operated on later at a safer period The degree of ketosis in acute appendicular obstruction of equivalent duration is not nearly so pronounced and in fact is often absent

Pyrexia —In some of the more extensive and acute cases of caseation and more especially in younger patients the temperature was raised This was discussed at the Medical Society after Carson's paper Gauvain supported Carson that there was a rise in temperature in only a few cases while Warren Low and others were emphatic that the cases they had seen had continued pyrexia Carson in reply suggested that cases with pyrexia were due to systemic tuberculosis with peritoneal extension Braithwaite (1925) makes the statement —

> It has been suggested that an acutely inflamed gland causes a rise of temperature whereas acute appendicitis does not How many men in general practice will agree with this? It is known that almost every painful condition in a child gives rise to an elevation of temperature A temperature above 100 F would indicate the condition to be tuberculous adenitis rather than appendicitis

This is clearly put by John Fraser (1022) Fever introduces the illness while in appendicitis temperature is comparatively late in its appearance

Marshall (1028) in a study of 46 cases of simple ileo-cæcal lymphadenitis finds symptoms very similar to those given here

Radiological examination was made in 18 of our cases and in 11 of these areas of calcification were seen suggestive of glands that had calcified or had begun to calcify Carson only once observed a vague shadow of a caseating mass by radiography but he was describing a series of younger patients in whom calcification in other glands had not taken place At that time (1018) radiological apparatus and technique were not so efficient as they are to-day In our series there were a number of caseous cases in which calcified glands were also present The fuzzy mottled appearance of the latter is typical (see Fig 3)

None of the writers on the subject of tuberculous mesenteric adenitis appears to have suggested that X ray examination repeated at intervals would be of value in estimating the chances of the patient's recovery The appearance of well-calcified patches in a radiogram of the abdomen, where there were none previously, would undoubtedly be a good prognostic sign

Diagnosis —Many of these patients were admitted as cases of acute or subacute appendicitis and the figures show that the two conditions frequently coexist In diagnosing between them the points for and against each may be summarised in the following way The gland patient may show the several characteristics of either of the two main types that have long been recognised as tuberculous The sanguine type with her quick intelligence, fine regular features, clear skin, long lashes, and downy hair on the back and arms, and the phlegmatic type with slower intellect, thick skin, and podgy features In the gland patient there is commonly a characteristic history of previous attacks of pain, which may have been as severe as the present one In the appendicitis patient the pain is more severe, lasts longer, tends to settle in the right iliac fossa, and is seldom felt on the left side In the gland patient there may be nausea and possibly vomiting, in appendicitis vomiting is almost certain to occur In the early gland case the temperature may be raised to 100° F, sometimes more, whereas in appendicitis the temperature will not be raised until several hours have elapsed In the early stages the pulse rate will offer little help, but in the late stages it will be greater in appendicitis than in the gland case The leucocyte count in the early stage of each is low and will not rise appreciably in the gland case, but will soon reach 15,000 to 30,000 in appendicitis The breath will smell strongly of acetone in the gland case, but not in appendicitis until vomiting has been frequent If ketosis is present a general anæsthetic given for making a satisfactory rectal examination would be contra-indicated The area of hyperæsthesia is more diffuse and less intense in the gland than in the appendicitis patient This may be due to the situation of the gland—high up in the mesentery compared with the appendix—allowing it to act on nerve fibres distributed more extensively Should radiography be possible and positive, and the patient under skilled observation, and should other signs be fairly typical, it would be advisable to adopt the course of clearing the bowel with an enema, giving glucose by the mouth and rectum, waiting a few hours and repeating the leucocyte count Such a course sometimes allows operation to be undertaken at a less dangerous time or avoided altogether In case of doubt it will be safer to operate through a right paramedian instead of through one of the smaller incisions

CLINICAL PATHOLOGY

In reviewing these 38 cases the most striking fact is the large number which had an associated lesion of the appendix There were 18 cases with some involvement of the appendix—not old signs of inflammation but active acute inflammation or congestion, in almost half the total number Either the appendix was giving rise to the symptoms for which the abdomen was opened or the appendix inflammation provided the little extra stimulus for the gland to break down and become caseous This last explanation should not be taken to mean that all such glands require an added toxæmia from appendicular inflammation to cause caseation. Both explanations seem to have claims to truth and both are probably true Morley Fletcher (1929a) writing of children describes an "acute localised form" of tuberculous peritonitis This form which he calls "appendicular" or "ileo cæcal," is associated with caseous glands in the ileo-cæcal angle and an injected swollen appendix He advises removal of the appendix and of the adjacent mass of glands The appendix was examined microscopically for evidence of tuberculosis in 15 of our cases In none of them was any evidence of tuberculosis found. Four of the glands removed were examined microscopically and all were tuberculous

Localised tuberculous peritonitis —In caseous cases danger arises when small areas of inflamed peritoneum become attached to adjacent coils of gut o to the omentum. When the inflammation subsides the adhesions may either contract, stretch, or separate completely or the omentum may become stretched out into a tenuous band, which eventually gives way altogether There have been many instances of this and in one case the gland and its adherent omentum were removed in one piece On the other hand, when a loop of gut adheres to the mesentery and becomes twisted or kinked or leaves an opening through which another loop of gut can pass, strangulation may occur The omental band may produce a mechanical obstruction by pressure on the gut Inflammatory changes in the mesentery itself may shorten it and so bring about conditions favourable to the development of a volvulus or may cause axial rotation of the gut as is referred to under the obstruction series

Perforation of caseous glands —Perforation of a gland must be a fairly frequent event With perforation the risk of acute general tuberculous peritonitis is obviously very great Widespread bowel and omental adhesions are sometimes instances of recovery from this condition, with subsidence of activity and without persistent ascites Some cases of acute general tuberculous peritonitis also represent a proportion in which the patient was not able to resist such a sudden infection In the earlier stages of both varieties there would be free fluid in the abdomen, and the slight rigidity and tenderness associated with it might easily lead to the diagnosis of an attack of mild appendicitis In this connexion it is interesting to note that Fletcher (1929b) states that *trauma* may have a direct relation to the onset of tuberculous peritonitis A blow on the abdomen when the muscles were not on guard might easily rupture a caseous gland There were 2 cases of perforation in our series In neither was there a history of injury From what has been said it will be evident that these two cases do not represent the true incidence Their histories are briefly as follows

A male aged 29, with an eight hours' history of generalised abdominal pain coming on immediately after dinner and later settling under the left costal margin There was a large amount of free fluid in the abdomen and a large perforated tuberculous mesenteric gland with thickened and calcified walls The gland was incised and drained The appendix was not removed He felt in much better health 19 months after operation, and had gained 1¾ in weight

A male aged 20 a farm servant, was admitted after several attacks of abdominal pain during the previous five months For the last five days the pain had become worse He vomited on the day of admission He was flushed had a dry tongue, foul breath a temperature of 101 5° F, and a pulse rate of 104 The abdomen was rigid and slightly tender all over A large suppurating mass of tuberculous mesenteric glands was found at operation The mass had perforated filling the abdomen with pus The appendix was gangrenous There was generalised miliary tuberculous peritonitis The perforation in the mass was closed, the abdomen mopped out the appendix removed and the abdomen closed The appendix on section showed miliary tubercles of the serosa and the pus from the mass and the exudate was sterile and negative for tubercle bacilli by staining methods. When seen 7 years later the patient was in better health than before had gained in weight and had been relieved of his symptoms He still had frequent pains in the left hypochondriac region which at times almost incapacitated him and were sufficient to cause him to come up to be seen on two occasions with a view to further operative treatment

It seems that the first patient overcame the tuberculous process completely and the second now suffers occasionally from the effects of intra-abdominal adhesions.

TREATMENT*

Surgery —In 29 of the 38 cases (more than three quarters) it was possible to excise the affected glands This does not mean that all the calcareous and enlarged glands were resected in any one patient usually all the larger and caseous glands were excised and any calcareous glands which were considered likely to give rise to trouble in the future When it was not possible to excise the glands completely either on account of the bad condition of the patient or from the position in the mesentery or on account of the size of the mass with its surrounding induration and œdema, evacuation with a spoon or scoop was resorted to after an incision had been made into the capsule There were 5 such cases a sixth might be added where the procedure was to incise the mass swab it out and leave in a drain because secondary infection was suspected Evacuating the contents of the gland capsule does not appear to be the ideal procedure but it is often the only one compatible with safety

Sinus formation is commented on by Braithwaite and he advises against the removal of a gland near the mesenteric border in case a fæcal fistula results In a good coloured picture of such a case the segment of gut near the gland is shown inflamed and somewhat contracted He recommends isolation by omental graft when removal is difficult.

Therapeutics —It has been suggested in the past that attempts might be made to hasten calcification by giving calcium salts More recent work on the calcification of tubercles in experimental animals shows that irradiated ergosterol or vitamin D has a great effect in the promotion of calcification of caseous tubercles in rabbits (Levaditi and Li 1931) and guinea pigs (Jampolis and Witt 1933) The beneficial effect of sunlight both natural and artificial in the general treatment of the disease may be largely due to this process of calcification sealing up the tuberculous areas It may well be that the degree of calcification in the other areas of the body liable to tuberculosis and the benefit likely to ensue from ultra violet radiation are very closely related—e g calcification in the lung lesions is relatively rare and ultra violet radiation is understood to be contra indicated in phthisis Jampolis and Witt are cautious in so far as they point out the fact that the conditions in the animals experimented on are not directly applicable to man A warning may be noted here in the treatment of caseous patients by ultra violet light or sunlight Carson (1926) quoted Rollier in an excellent article on tuberculous peritonitis to the effect that sun treatment produces its best results in the ascitic type but in the caseous type a congestive reaction accompanied by vomiting and fever may occur Vitamin D increases the serum calcium and phosphorus and both are then retained in greater quantities in the body Milk is the most important food containing calcium Absorption of calcium is promoted by an alkaline digestive juice Practically therefore the patient should be given vitamin D exposed to ultra violet rays and encouraged to drink milk with some sodium bicarbonate some time before meals The mineral salts are supplemented, if need be by the administration of calcium and phosphorus As in cervical tuberculosis it will be obvious to anyone who has had a long experience that there is much uncertainty in any method of palliative treatment In some cases a diagnosis is not possible in the abdominal cases until the abdomen is opened. Radical treatment at the time is then more appropriate Glands which are merely swollen should not be removed A piece may be taken for biopsy and the abdomen closed

TABLE I

Results of Treatment

Traced.	Untraced	Excellent	Fair	Poor	Died
36	2	27	3	1	5

It seems also that when a preoperative diagnosis of caseous glands has been made, the safest treatment is removal. Such patients are liable to develop grave complications at any time if nothing radical is done One should however avoid operation if repeated radiological examination shows that calcification is actively progressing From the suggested relationship between a diseased appendix and caseation it seems that the appendix should generally be removed

The results of treatment in the 38 cases are shown in Table I

Calcareous Mesenteric Glands

This part of the paper is based on a study of 201 consecutive cases summarised in Table II

TABLE II

Summary of Cases with Calcareous Glands

Nature of case	Traced	Untraced	Males	Females	Total
Calcareous cases	144	2	91	75	166
Reoperation cases	31	4	15	20	35
—	175	26	106	95	201

It has been assumed that the calcareous glands were at one time caseous and have run their usual pathological course In the absence of any definite information we may take it that the majority of glands are well on the way to complete calcification at the end of a year after they have been infected with tubercle many have probably commenced to calcify within half that time Radiological evidence in a series of patients of different ages would be most valuable if it could be obtained

The dangerous period —During a period then of a few months to a year or more each caseous and calcifying gland may be a source of danger This does not necessarily correspond with the period during which the patient is actually in danger One or two glands may caseate and commence to calcify Others may break down some considerable time after the first The cycle is gone through again with another danger period to the patient There is no doubt about this happening as in some of the cases caseous glands coexisted with calcified gland Clinically this repeated cycle was recognised by Hutchison (1925) when he wrote:—

> “I do not think one has a right to say that a case is completely cured simply because after a few months the

symptoms have not recurred The disease is apt to remain latent for a considerable time Such a child may, perhaps, get an attack of diarrhœa, or other slight illness, which pulls him down and, his resistance for the time being lowered, the process flares up again"

The sequence would be an intestinal upset, increase in caseation with more rarely the bursting of a caseous gland, and the onset of a more or less localised tuberculous peritonitis The second attack would tend to be of slighter extent because of the adhesions left by the first, and of less severity on account of the resistance developed by the patient

Effects of natural cure—That a natural cure by complete calcification occurs in a very large percentage of cases must be obvious In many cases the cure is complete from the patient's point of view—he has no symptoms whatever The glands are in a position in which they are not liable to press on any of the important intra abdominal structures They are of such a size and shape that they do not rub on adjacent structures when strenuous movement causes the abdominal contents to change their positions A possible or, judging by operation cases, a probable exception is when there is a spike of calcareous matter sticking out of the gland, or when the surface is crenated as is often observed Even small masses of this kind give rise to symptoms It seems therefore that obese subjects would be less liable to suffer than the thin, since the glands would be surrounded by fatty beds which would tend to distribute their pressure more evenly over a larger area These calcareous masses must have very little tendency to contract, once calcified, their shape and size tend to remain the same, a fact very much in the patient's favour, or had healing taken place by fibrosis there would be a continued contraction of the area with a greater liability to the narrowing of the blood vessels, to the obliteration of lymphatics, to pressure on nerves, and to distortion and shortening of the mesentery If a large number of the glands were destroyed, the passage for the fat might be inadequate

Effect on fat absorption—That tuberculous disease of the mesenteric glands does embarrass the absorption of fat is undoubted Still (1927) gives a good illustration from a specimen which showed the engorgement of the lacteals with caseous material and "perhaps also some fat" The lacteals are seen to be connected with an enlarged gland in the mesentery Only a few of the lacteals are affected If the diseased glands were very numerous and situated near or actually at the root of the mesentery there would be considerable interference with the absorption Talbot (1912) has shown that fat absorption may be prevented by the enlarged glands blocking the lymphatics In our own series there was no gross evidence of serious non absorption of fat apart from the fact that some of the patients on admission were described as being thin or poorly covered Again after operation when it might be expected that the additional fibrosis would constrict the lacteals even more, there was no case with excessive wasting in those examined The operative relief of pressure on the vessels had been adequate

Unusual end results—The development of calcification is not limited to the glands themselves Tubercles on the peritoneal surfaces may become calcified as was found in one of the cases The most likely explanation of this is that they have resulted from healing in an area of generalised tuberculous peritonitis that has become caseous during the acute stage

A female, aged 28, had had an operation 5 years before for a psoas abscess She had passed pus by the bowel 3 years previously She was found at operation to have bilateral tuberculous salpingitis, an irregular calcareous mass at the root of the mesentery an omentum showing many apertures, and in addition *numerous calcareous tuberculous nodules studded all over the abdominal peritoneum* There were also numerous omental bands which were not giving rise to obstruction This patient was untraced after operation

It is interesting in this case to note that there was an appendix abscess which was thought not to be tuberculous, and also the presence of the omental apertures, which may have been caused by the breaking away of the omentum from the caseous areas when they had become calcified

SYMPTOMS AND SIGNS

In a large number of cases, calcareous glands are present in the abdomen without giving rise to any complaint whatever They are discovered by accident in radiological examination for some unrelated condition such as a fracture of the pelvis Such a case is exemplified in Fig 1, taken from a male patient suffering from hæmorrhoids, who had lived to the age of 65 years without having a single abdominal symptom The main symptom that may be ascribed to the presence of calcareous mesenteric glands is generalised abdominal pain later settling in the right lower quadrant of the abdomen It is dragging or colicky, and sometimes radiates to the thigh and back and is accompanied by nausea and occasionally by vomiting In many of the cases the pain is liable to come on in repeated attacks of relatively short duration and is especially worse after exercise and when the patient is fatigued There is usually a tendency to constipation which is worse during the attacks There may be some degree of relationship between the menstrual cycle and the occurrence of the pain Frequently the pain commences in the left abdomen and radiates to the right Some of the patients complain of discomfort some hours after food, some immediately after Backache is also commonly complained of Auchincloss (1930) lays stress on night discomfort after a hard day's exercise and thinks it is due to venous congestion by pressure of the node Aggravation of the symptoms by work or exercise has been very frequently noted in our series of cases. When this is so, rest usually brings relief Often from the history alone a mistaken diagnosis of duodenal ulcer has been made

PHYSICAL SIGNS

Apart from some slight tenderness and hyperæsthesia in the right lower quadrant of the abdomen or the umbilical region, there may be no other physical sign to be made out. There may be some rigidity in the right iliac fossa Infrequently a palpable mass may be felt in some part of the abdomen In this series there was a mass palpable in 11 cases, but of these probably only 5 were due to enlarged glands The situation in all 5 was in the right iliac fossa and one of the masses was tender In another case an indefinite mass was felt in the epigastrium, but it is doubtful whether it was glandular There is usually some distension of the abdomen which may be more marked during attacks of pain Lockwood's sign was present in 33 cases In 29 of them the appendix was found to be bound down to the cæcum by adhesions The constancy of the sign makes it very valuable in the diagnosis of chronic appendicitis An opportunity occurred of testing Lockwood explanation of the mechanism of its production

A patient was admitted suffering from pain, nausea, and vomiting of eight days' duration The diagnosis was one of chronic appendicitis. The sign was positive. At the operation the appendix lay with its tip anchored over the pelvic brim and the lower end of the ileocæcal valve was on the stretch. On pressing the cæcum before the appendix was removed, fine crepitant gurgling occurred and could be repeated as often as desired. After removal of the appendix and freeing of the tension the sign could no longer be elicited.

Golden and Reeves (1929) point out that the leucocyte count is not raised in calcareous gland cases and this would seem a valuable aid in the differential diagnosis from acute and subacute appendicitis.

The *radiological examination* of the abdomen is generally conclusive but it is not uncommon for the reports on gland cases to be misleading. This is often due to the gland overlying the lumbar spine or the iliac bones. If examined carefully and with the eyes on the look-out for the glands they can be easily seen in the film even if they overlie the bodies of the vertebræ (Fig 2). Out of the 201 cases 110 were subjected to X-ray examination of the abdomen. Of these 84 were reported to have calcareous glands present. Thus 26, almost a quarter of the total number examined, were missed on ordinary examination of the films but some of these may have been only caseous. The glands are generally seen round a line extending from the left side of the 2nd lumbar vertebra to the right sacro-iliac joint—i.e. in the line of attachment of the mesentery. They are of irregular shape and have fuzzy outlines. The larger ones are speckled, being apparently composed of many centres of calcification. The typical appearance resembles no other pathological condition (see Fig 3). In our experience ketosis is common. The odour of acetone in the breath or its detection in a sugar-free urine should lead to a radiological examination of the abdomen.

The conditions which might be confused are phleboliths, ureteric stones, enteroliths and opaque bodies in the bowel, stones in a low-lying kidney or gall-bladder and calcareous deposits in an infected kidney. In any case of doubt stereoscopic pictures will often settle the matter or the methods usual in pyelography will help. A good illustration of this is the following:—

A married woman of 29 was sent for consultation on account of a feeling of heaviness and discomfort in the upper abdomen after meals and dating from pregnancy 3 years previously. The patient had had occasional difficulty in urination but no frequency. The urine was found to be normal. X ray examination showed a small calcified gland in the right upper abdominal quadrant but no gall-stone. Visualisation of the renal region and of the gall-bladder shows its relationship to these organs. The latter film shows a small lighter area in the lower third of the gall-bladder which is probably a single cholesterin gall-stone. The patient's symptoms scarcely warranted operation and she was discharged. Unfortunately she left the district and has not been traced.

RESULTS

Of the 106 cases that required operation 22 were untraced. More than half of those traced were examined and the remainder received a questionnaire.

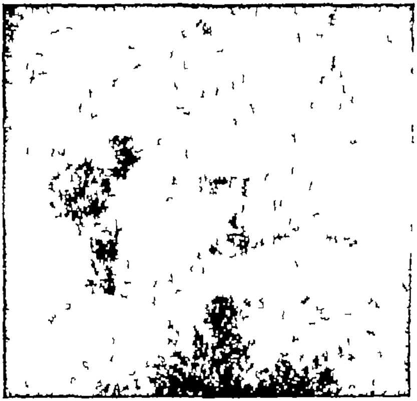

FIG. 1.—Calcified glands in the right iliac fossa, from a man aged 65 who had no symptoms.

Of the 201 cases, 35 required reoperation. 3 patients died shortly after operation, 2 of them having been admitted with acute obstruction and the third being in a very obese female whose wound burst 9 days after the removal of a chronically inflamed appendix and a few calcareous glands and the freeing of some light adhesions. Recent general peritonitis was present, the cause of which was not apparent at the post mortem. The fourth death occurred suddenly two years after post-operative hemiplegia from mitral stenosis. The remaining 163 cases are classed in five groups:—

Group I had 19 cases, discovered at operation performed for conditions in the abdomen other than appendicular disease and bands and included here for the sake of completeness. We have called them "accessory cases." Briefly there were 6 with duodenal ulceration, 2 with gall-bladder disease, 3 had retroversion of the uterus which was treated by operation in 2 cases, 1 had a perforation of the gut by a fish bone and another had a testicular tumour removed. 3 had ovarian cysts, 1 of which was very large. 1 was complicated by bilateral tuberculous salpingitis. In all 17 were traced, 9 being excellent results, 3 good, and 2 poor. One case of carcinoma of the appendix showed a good result three years later. There were 3 deaths.

Group II.—A few cases in which glands were seen at operation but were not removed.

Group III.—Those in which the appendix was found to be subacutely or acutely inflamed, ulcerated or injected.

Group IV.—The largest of all the groups includes those cases where the appendix was found either t [illegible]

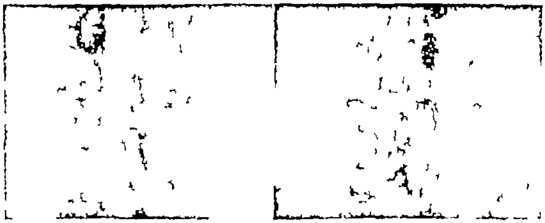

FIG. 2.—Radiograms of a case with calcified mesenteric gland: on the left hidden by the shadow of the middle vertebra; and on the right revealed by displacement of the mesentery.

chronically inflamed or of the atrophic variety, and one case of doubtful tuberculosis of the appendix There was one death

Group V—Where the condition of the appendix was not stated and assumed by us to be normal, or where it was found to be normal

The accompanying Table III summarises the results

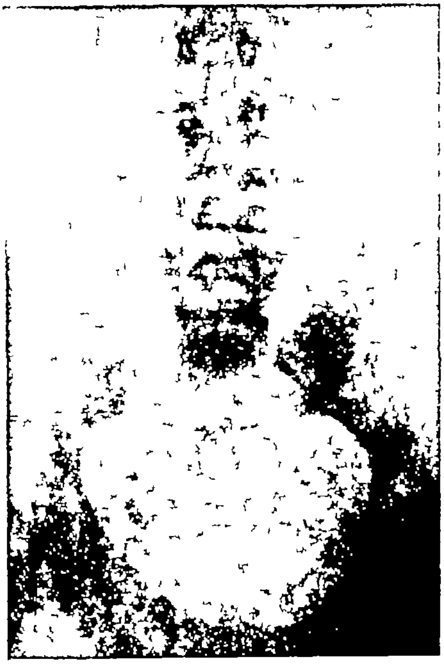

FIG 3—Multiple calcification showing appearance and distribution of the shadows

Reoperation Cases

Of the 201 patients (excluding the 38 caseous cases) who were operated on 35 required more than one operation on the abdomen There were 15 males (of the total 106) and 20 females (of the total 95) Two operations were needed in 21 cases, 11 had three operations, 2 had four operations, and 1 had five operations We traced 31 of these cases, 1 patient had died and 4 remained untraced In their results, 16 were good and 14 unsatisfactory

No surgeon seeks these operations, they are done only from necessity and when the symptoms are considered to be due to a lesion that can be rectified without producing a worse one In the interval, all ordinary care in diet is exercised by the patients and the use of aperients forbidden A filling diet and slow circling exercises three times a day has often given excellent results in those suffering from what might be called "aperientitis" This is certainly true before the first operation in chronic cases

Prophylaxis—It is even more difficult to generalise from these cases than in the cases of calcareous glands Since September, 1929 saline has been left in the abdominal cavity in most cases which were not acute Usually two pints but sometimes more were used the maximum being five pints It is difficult to give any figures to support the impression but it seems that the results after the use of saline had been adopted were much better than before Apart altogether from the improvement in the patient's outlook from the prevention of adhesions there was a very pronounced and almost immediate improvement in the condition of the pulse on the introduction of the fluid

In considering reoperation on adhesion patients it is essential, unless acute symptoms develop, to allow time for the abdominal contents to settle down after the trauma of the last operation The ward sister states that the immediate post-operative condition is always more troublesome in these cases than in many so called larger operations Even in patients who had only one operation, we were struck by the numbers who had a fair amount of abdominal discomfort up to six months after operation and even longer In many cases adhesions disappear altogether if left for a long time If the patient's life is a misery at the end of two years operation should be undertaken

Tuberculosis of the Appendix

During the period under consideration 106 appendices were submitted to microscopical examination for evidence of tuberculosis Of these, 93 were from cases of caseous and calcareous mesenteric glands and the other 13 were included because of some irregular thickening or sclerosis observed at operation, 3 only showed evidence of tuberculous disease In 1 of the 93 gland cases a single minute area alone showed signs of actual tubercle, but 8 showed prominent and active lymphoid deposits in the mucosa

Among the 13 cases included—no diseased glands being present—because of irregular thickening or sclerosis, were 2 of undoubted tuberculosis In both cases the disease was limited to the appendix itself and *in both the mesenteric glands were unaffected*, which shows that the statement made by Sir William Willcox (1934) may not always hold "I would remind you that one sometimes meets with a tubercular appendix That may possibly be diagnosed by the history of the case but at operation it is diagnosed by the presence of tubercular glands"

TABLE III

Operative Results

Group	Traced	Untraced	Excellent	Good	Poor	Bad	Died	Total
I Accessory cases	17	2	9	3	1	1	3	19
II Glands not removed	6	0	3	1	1	1	0	6
III With acute or subacute appendicitis	36	6	32	1	1	2	0	42
IV With chronic appendicitis	71	13	56	9	2	3	1	84
V With normal appendix	14	1	9	3	1	1	0	15
Totals	144	22	109	17	6	8	4	166

Conclusions

(1) The caseous stage of tuberculous mesenteric glands is the dangerous one from the point of view of the spread of the disease, the complications, and the mortality (2) Bursting of a caseous mesenteric gland is probably a fairly frequent event and results in various degrees of tuberculous peritonitis (3) Caseous mesenteric glands are a common cause of pathological conditions leading to intestinal obstruction (4) There is apparently a relationship between the caseation and the inflammatory conditions of the appendix Caseous glands should be removed when found at operation and appendicectomy carried out as a routine (5) Adhesions and bands of various kinds often result from the healing of subacute tuberculous peritonitis (6) Calcareous mesenteric glands alone frequently give rise to symptoms and

require to be removed (7) Appendicectomy alone is sometimes done in acute or subacute cases when tuberculous glands are the cause of the symptoms (8) Abdominal tuberculosis in young adults according to other workers appears to be more severe than that found in a ward for general surgical cases (9) There appears to be very little liability to the stirring up of a tuberculous lesion when glands are removed even if they are caseous (10) The administration of intraperitoneal saline at the end of the operation tends to prevent adhesions. (11) Reoperation should not be undertaken if it can be avoided before two years have elapsed (12) *Progressive calcification in mesenteric glands* as shown by repeated X ray examination can be a guide in prognosis (13) Tuberculosis of the mesenteric glands tends in the main to natural cure

We are indebted to the honorary staff of the electrical department of the Aberdeen Royal Infirmary for the loan of many radiograms; to the late Dr G M Duncan for the examination of the pathological material and for his advice on numerous occasions to Dr G S Banks for his reports on the patients admitted to the Municipal Hospital; to Prof Shennan and his assistants in the pathological department of the University of Aberdeen for the reports of the post mortem examinations and to the ward sister and the members of the nursing staff of the Aberdeen Royal Infirmary for their help on many occasions

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INTRADERMAL TESTS FOR SUSCEPTIBILITY TO WHOOPING-COUGH

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In the sphere of communicable disease the prevention and control of whooping-cough is now regarded as one of the most serious problems confronting public health authorities The disease is responsible for 2000–3000 deaths annually in England and Wales and as many as 40 000 cases of the disease are said to occur every year in London alone These figures do not reflect the vast amount of physical and nervous suffering the loss of school attendance and the risk of impaired health and lowered resistance to tuberculosis that those who survive an attack of whooping cough are apt to incur

It must be admitted that in the past efforts to control this disease—by school notification isolation of sufferers exclusion of contacts and more recently administration of convalescent serum—have not been attended by any substantial measure of success Within the last few years however the suggestion that methods of specific immunisation might be effectively employed in whooping-cough prophylaxis has brought renewed hope and in spite of recent efforts to implicate filtrable viruses in the causation of the disease Sauer's claim that he can immunise children against pertussis by means of a specially prepared vaccine of the Bordet-Gengou bacillus continues to command serious attention

THE TEST

A little more than a year ago Paterson Bailey and Waller (1935), while confirming in the main Sauer's results attempted to devise a skin test of susceptibility to whooping cough using as their antigen Sauer's vaccine The present investigation prompted by this latter work is an effort to estimate the reliability of this intradermal test as an index of susceptibility So far I have made no attempt to assess the practicability of active immunisation by Sauer's technique

The test is based on the skin reaction to an intradermal injection of Sauer's vaccine (1933) which is made from 5–7 strongly hæmolytic strains of *Hæmophilus pertussis* (*B pertussis* of Bordet and Gengou) isolated from early cases of whooping cough by the cough plate method

The bacilli are grown for 48 hours in an incubator on the cherry-red Bordet medium made with freshly defibrinated human (placental) blood. The bacilli are scraped off and suspended in 0 5 per cent phenolised physiological salt solution and left to stand in a refrigerator for one week. Sterility is ensured by culture on three successive days The concentrated vaccine is then diluted until 1 c cm contains approximately ten billion bacilli and it is stored in a refrigerator until required for use

Technique—Into the forearm 0·1 c cm. of Sauer's vaccine is injected intradermally so as to produce a raised weal. The skin reaction at first was read at 24 and 48 hours after injection but subsequently the 48-hour reading was discontinued as it was found that strongly positive reactions at 24 hours had very often so faded as to make an accurate reading impossible at 48 hours. Careful observation showed that in all cases where a positive skin reaction developed it did so within 12 hours of injection It was further noticed that strongly positive reactions at 12 hours were often much less definite 12 hours later In the latter half of this investigation accordingly the reactions were read at 12 hours and again at 24 hours after injection

Reaction.—A positive reaction varied widely from a mild hyperæmia of the skin at the site of injection circular in form and about 10 mm in diameter to an intense hyperæmia at least 30 × 20 mm. in extent with raised edges and some induration. This latter type of reaction faded from red through pink to brown and had usually disappeared in 72 hours without leaving any residual staining

At first the interpretation of the milder reactions gave rise to considerable difficulty and until 100 cases had been tested there was a tendency to regard as positive reactions which with further experience one learned to classify as merely the response of the skin to the trauma of the needle In particular with the sensitive skins of infants up to 18 months of age this traumatic factor was apt to show itself and resulted in a certain number of reactions being interpreted as positive in cases where there was no doubt about the absence of any history of whooping cough This possible fallacy (referred to again later) must be borne in mind in considering the results of the present investigation Although the difficulty of interpretation would appear to lessen the value of the test for routine diagnostic purposes it should be made clear that with further experience it was found possible to differentiate between purely traumatic responses and the true positive reaction in every case

A positive reaction is here taken as connoting immunity to pertussis, although it is realised that objections might be raised to this on the ground that the skin reaction would be given by persons who were sensitive to other members of the group—e g, *Hæmophilus influenzæ*—while non immune to the Bordet Gengou bacillus Again, it might be urged, on the analogy of the Mantoux test in relation to tuberculosis, that a positive skin reaction indicated merely previous experience of the bacterial antigen short of immunity to clinical pertussis But, it is submitted that the antigen used in this investigation —viz, a specially prepared vaccine containing the whole Bordet Gengou bacillus—places the test on a different plane to the Mantoux, to group intradermal tests, and to the test recently described by Siebler and Okrent (1934)

RESULTS

The test was originally performed on children and adults irrespective of age but was subsequently restricted to children under 10 years of age owing to the difficulty of obtaining a reliable history of previous infection in adults This difficulty existed also to a less extent in children, but the history of previous infection can be personally vouched for in all cases included in the present investigation The Table gives the results of the investigation The fact that 40 cases gave immune reactions in spite of no history of clinical whooping cough is at first sight rather disconcerting, but when allowance is made for the development of immunity in a highly urbanised population because of repeated small doses of *H pertussis* causing subclinical varieties of the disease, this discrepancy becomes more understandable Latent epidemics must be fairly active in a city with housing conditions like Dublin Furthermore it is generally agreed that not more than 60 per cent of all children in a community exhibit frank manifestations of whooping cough at some time or other (Leslie and Gardner 1931) While the escape of the remaining 40 per cent may be due to absence of exposure to infection, an inherent resistance to disease is admitted by all epidemiologists An instance of this noticed in the present investigation was in the case of two brothers A and B, aged 4 and 6 who both showed strongly immune reactions although only A had suffered from whooping cough

Results of Skin Test for Whooping cough (371 *Cases*)

Past history	Reactions			
	Positive		Negative	
No whooping-cough	40	29 %	208	90 %
Whooping-cough	99	71 %	24	10 %
Total	139	100 %	232	100 %

During the investigation certain interesting features emerged

(1) Four cases of whooping-cough seen late in the spasmodic stage all showed strongly immune reactions

(2) A case of scarlet fever who had been in contact with whooping-cough was found on routine testing to show a non immune reaction In due course he developed whooping-cough and five weeks after the first test was retested when he gave an immune reaction

(3) There were 9 cases in close contact with a case of whooping cough but with immune reactions, who never developed the disease although only 2 of these had a definite history of a former attack.

(4) A child suspected of developing whooping-cough gave a negative (non immune) reaction Under observation the suspicion was dismissed on clinical grounds Repeated tests with Sauer's vaccine gave a persistently negative (non immune) response

(5) Although active immunisation was not included in the scope of this preliminary investigation three children with non immune reactions were given a course of immunising injections with Sauer's vaccine, receiving three weekly subcutaneous doses of 1 c cm, 1 5 c cm, and 1 5 c cm into each arm, making a total of 8 c cm for each case Tested one week after the third injection all had strongly immune reactions

CONCLUSIONS

A series of 371 cases were examined for susceptibility to whooping cough by an intradermal test, using Sauer's vaccine as an antigen the results were compared with the history of previous infection

The results of skin testing show a high measure of correlation in those patients having non immune reactions, 90 per cent of whom gave no previous history of whooping cough

A slighter measure of agreement between the result of the test and the previous history was shown in the case of those giving immune reactions, 71 per cent of whom were known to have had an attack of whooping cough. It is certain that some at least of these reactions were incorrectly read as positive (or immune) at the commencement of the investigation

Certain incidents—the insusceptibility of positively reacting (immune) patients after exposure to infection, and the change of the reaction from negative to positive after an attack of whooping cough—support the view that the test is, within limits, a reliable index of susceptibility to *H pertussis* infection

I wish to express my thanks to Dr C J McSweeney, medical superintendent of the Cork-street Hospital, at whose suggestion this work was undertaken, for help and encouragement during the investigation

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THE DIAGNOSIS OF WHOOPING-COUGH

THE COMPLEMENT FIXATION AND INTRADERMAL TESTS

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The landmarks in the laboratory diagnosis of whooping cough are briefly the following —

In 1906 *Bacillus pertussis* was first described by Bordet and Gengou as the causal organism of whooping cough. They also found (1907) that the serum of patients convalescing from whooping cough had the property of deviating complement when *B pertussis* was used as antigen. Leucocytosis in whooping cough had been previously described by Fröhlich (1897), while later investigators found that a relative lymphocytosis was the outstanding feature in the hæmatological picture The bacteriological diagnosis of whooping cough by the "cough plate method" was introduced by Chievitz and Meyer (1916), and has since been used extensively in Denmark and other countries with considerable success in the early diagnosis of the infection In 1931 Leslie and Gardner dealing with the antigenic structure of the organism, clarified the confusion on the subject by describing four antigenic phases of *B pertussis* Phase I being the most toxic and the best antigen for vaccines with Phase II it corresponded with the smooth state Phases III and IV with the rough state of other organisms

An intradermal test for the diagnosis of whooping cough has been used by several investigators with varying results. Siebler and Okrent (1934) came to the conclusion that children with a previous history of whooping-cough usually gave negative skin tests the converse being also true—that children with no previous history of whooping cough usually gave a positive skin reaction The vaccine used by these investigators was one prepared in a similar manner to that used by Sauer (1933) On the other hand Paterson Bailey and Waller (1935), also using Sauer's vaccine found that children with a previous history of whooping-cough usually gave a positive skin reaction whilst children with no previous history of whooping-cough gave a negative skin reaction In a subsequent letter in the same year Paterson (1935) stated that the results obtained varied with the batch of vaccine used

Methods and Material

The material used in the present investigation consisted of patients suffering from whooping-cough with or without complications who had been admitted to the wards of Belvidere Hospital during the epidemic of whooping-cough in Glasgow in the winter of 1934–35 ; children convalescing from broncho pneumonia during the following winter were used as controls

TECHNIQUE OF THE COMPLEMENT FIXATION TEST

The antigen used in the majority of the complement fixation tests was the St Mary's Hospital prophylactic A vaccine issued by Parke Davis and Co in a concentration of 4000 million whole *B pertussis* per c cm This vaccine is stated to be prepared from smooth strains of *B pertussis* It was found that a dilution of 1 : 5 of this antigen had practically no anticomplementary effect

TABLE I—*Complement-fixation Tests*

M H D of complement	2	3	5	Serum control 2	Result
Hæmolysis	c	c	c	c	Negative
	m tr	c	c	c	Doubtful positive
	tr	a c	c	c	Weak positive
	0	tr	c	c	Positive
	0	0	c	c	Positive.

M H D = minimum hæmolytic dose 0 = no hæmolysis tr = trace of hæmolysis m tr = marked trace ; a c = almost complete hæmolysis c = complete hæmolysis

In the test proper 0 25 c cm. of the diluted antigen was added to each of 4 test-tubes To each of these and to a fifth serum control tube containing 0 25 c cm of normal saline the patient's serum was added in amounts which varied from 0 05 c.cm in the first series of cases to 0·2 c.cm of serum from the later batches of sera, this latter amount of sera having been considered to be the optimum amount of serum for the test The complement dose of fresh guinea pig's serum was estimated for 0·5 c cm of sensitised sheep cells (3 per cent) and 2, 3, 5 and 7 doses of complement were added to tubes 1 2 3 and 4 and two doses to the fifth serum control tube In the later complement fixation tests the fourth test tube containing 7 doses of complement was omitted. The test tubes and their contents were incubated for 1½ hours at 37 C after which 0 25 c cm of sensitised sheep cells (3 per cent) was added, incubation being carried out for a further hour at 37° C. In each batch of complement fixation tests serum and antigen controls were put up and a positive human or rabbit serum was included in the tests.

Table I indicates how the readings were recorded In the analysis of results doubtful positive reactions were recorded as negative

In order to test the antigenic efficacy of the various vaccines a rabbit was given intravenous injections of the St Mary's vaccine and complement fixation tests were done in the usual way using St Mary's vaccine Madsen's Danish vaccine and Sauer's vaccine All the vaccines fixed complement satisfactorily best results being given with the Sauer vaccine

TECHNIQUE OF THE INTRADERMAL TEST

The following vaccines were used for the skin test

(1) Sauer's pertussis vaccine containing 10 000 million organisms per c cm

(2) Whooping-cough dissolved vaccine containing the dissolved constituents of 4000 million or 8000 million organisms per c.cm. prepared by the Glaxo Laboratories Ltd

(3) Whooping-cough vaccine (prophylactic A) containing 4000 million organisms per c.cm. prepared by the Inoculation Department, St Mary's Hospital (issued by Parke Davis and Co)

(4) Kreuger's bacterial antigen prepared by mechanical disruption of masses of *B pertussis* 1 c cm. of the undenatured antigen being roughly equivalent to 10 billion bacilli.

All of these vaccines consist of whooping-cough bacilli alone either in the intact state (e g Sauer's and St Mary's vaccine), mechanically disrupted (e g Kreuger's vaccine) or chemically dissolved (e g Glaxo vaccine) None of the vaccines used were in a dilution lower than 4000 million organisms per c cm

In each case 0 1 c cm of the vaccine was injected intradermally on the flexor aspect of the forearm the proper antigen control being used for each different type of vaccine except in one case where Kreuger's vaccine was used without a control. The readings were taken when the reactions were at their height usually 18 hours after the test had been done Later readings were also taken but these were invariably found to be less intense than the 18 hour readings

A skin reaction was considered positive when the area of redness was 1 cm or more in its longest diameter the control test being negative There is usually an area of induration which may or may not be more than 1 cm across in each skin test if it is positive ; this indurated area when present is both visible and palpable

Results

THE COMPLEMENT FIXATION TEST

The results of the *complement fixation tests* will be considered in two groups (1) *cases not treated therapeutically with B pertussis vaccine and* (2) *cases so treated* In each of these groups a *special analysis* will be made of cases with negative reactions in an attempt to find out the causes of the negative tests There is a third group of control cases

Group 1 non vaccine treated—There were 58 *patients in this group of whom 44 or* 75·8 per cent gave positive complement fixation tests

The average duration of infection from the onset of the illness until the blood had been withdrawn was 4 [illegible] days Patients from whom blood had been withdrawn on or before the twenty first day of illness numbered 21 of whom 15 or 71 42 per cent gave positive complement fixation reactions. The duration of illness from the onset until blood was withdrawn in the remaining 6 cases with negative complement-fixation tests was respectively 6, 9 10, 18, 19, and 21 days There were 37 patients who had blood taken off after the third week of illness, and of these 29, or 78 40 per cent, gave positive complement fixation tests An analysis of the reactions according to age groups in these 58 cases suggests that the antibody response is less active in the younger children, so that negative tests are most likely to occur in the younger age groups (see Table II)

TABLE II—*Variation with Age*

Age in years	Number of cases	Negative	
		Number	Per cent
0–2	15	5	33 3
2–5	34	9	26 4
5 and over	9	0	0

When the 14 cases with the negative complement fixation reactions were further analysed various factors possibly responsible for a negative reaction were elicited These are as follows —

1 Extreme youth 4 cases were less than a year old when blood was withdrawn

2 A short duration of illness before the blood was withdrawn 6 cases had blood withdrawn 3 weeks or less from the onset of the disease

3 Anticomplementary sera 3 cases were labelled as having negative complement fixation tests because their sera were anticomplementary

4 A severe form of whooping-cough 2 cases had severe whooping cough when the blood was withdrawn

5 The presence of acute complications 2 cases had broncho pneumonia when blood was withdrawn

6 In addition, in 6 cases, less than what was later regarded as the optimal amounts of antigen or serum or both was used, while 6 of the 14 cases were recorded as "doubtful positives"

It may be noted that in the above analysis of the various factors tending to produce a negative result each case may have been influenced by one or more factors It is of interest to note that in two cases the complement fixation tests which were at first negative became positive when blood was withdrawn for a second test, and in another two cases the complement fixation test when repeated showed an increase in the positivity of the test (Table III)

TABLE III—*Changes in Complement fixation Test*

Case	Age	Day of illness when blood was withdrawn	Result
A	3½ years	11 38 71	Negative Doubtful positive Positive
B	7 months	6 20	Negative Weak positive
C	4 years	45 73	Weak positive Positive
D	4½	14 33	Weak positive Positive

Group 2 vaccine treated—Of 43 cases treated with the smooth form of pertussis vaccine, 36, or 83 7 per cent, gave positive complement fixation reactions

The average duration of the illness from the onset until the blood was withdrawn was 55 8 days The average amount of vaccine given to an individual patient up to the time when the blood was withdrawn was 14 75 c cm of a vaccine containing 4000 million smooth strain whooping cough bacilli per c cm In this group there were only 4 cases from whom blood had been withdrawn on or before the twenty first day of illness Each of these 4 cases gave positive complement fixation reactions. Of the 39 cases who had blood taken off after the third week of illness 32 gave positive complement-fixation reactions (82 05 per cent)

Again as in Group 1 it is interesting to note the number of cases with negative complement fixation reactions in the various age groups (Table IV)

TABLE IV—*Variation with Age*

Age in years	Number of cases	Negative	
		Number	Per cent
0–2	22	5	22 7
2–5	16	2	12 5
5 and over	5	0	0

An analysis of the 7 cases with negative complement-fixation tests reveals similar factors to those acting in Group 1, and again the result of each complement fixation test may have been influenced by one or more factors

1 Extreme youth 4 children were less than a year old when the blood was withdrawn

2 Anticomplementary sera The sera was anticomplementary in 3 cases, each result being labelled negative

3 A severe form of whooping cough 1 case had severe whooping cough when the blood was withdrawn

4 The presence of acute complications 1 case had broncho pneumonia when blood was withdrawn

5 In 2 cases less than the optimum amounts of antigen or sera or both were used, and there were 2 doubtful positives amongst the 7 cases recorded as having negative complement fixation reactions

Control series—In a control group of 37 children, aged 0–5 years, convalescing from broncho pneumonia and with no previous history of whooping cough 36 had negative complement fixation reactions and 1 gave a "doubtful positive" reaction

THE INTRADERMAL TEST

In this section the object was to investigate the possible value of the skin test in the diagnosis of whooping cough, using the complement fixation test as a control The blood for the complement-fixation test was withdrawn in each case before the skin test was done The cases have been divided into two groups Group A consisted of 43 patients untreated by vaccines, most of whom were under five These patients had been admitted to the wards with the diagnosis of whooping cough with or without complications Group B was composed of 37 patients, aged up to 5, who were convalescing from broncho pneumonia and had no previous history of whooping cough This group has thus been used as a control to Group A of this series, as well as acting as control material for the complement fixation test

Group A—Of the 43 cases 25 were skin tested with Sauer's vaccine, 14 were skin tested with St Mary's vaccine 3 were tested with Glaxo vaccine composed of 8000 million organisms per c cm, and one was skin tested with Kreuger's vaccine Out of the 43 cases 31 gave positive complement fixation reactions and, of these 31 cases 21 gave positive skin tests Of the 12 cases with negative complement-fixation reactions 9 gave positive skin tests Altogether 30 out of the 43 cases (69 7 per cent) gave positive intradermal tests

Group B—The antigens used for the skin tests in this group were Sauer's vaccine and Glaxo vaccine containing the constituents of 8000 million whooping-cough bacilli per c cm Each case was tested at the same time with the two vaccines

Of the 37 cases, 36 gave negative complement-fixation reactions and 1 case had a "doubtful" reaction. In the skin tests 31 cases of the 36 were positive with both Sauer's and Glaxo vaccine Amongst the remaining 5 cases, 3 gave negative skin tests with both antigens, 1 gave a negative skin test with the Sauer antigen, and a positive skin test with the Glaxo antigen whilst the other gave a positive skin test with Sauer's vaccine and a negative skin test with the Glaxo vaccine The case with the doubtful positive complement-fixation reaction gave a positive skin test with both the Sauer and the Glaxo vaccine

Summary

The complement fixation test is of value in confirming the clinical diagnosis of whooping-cough In *atypical cases the test may by itself establish the* diagnosis of pertussis by conversion from a negative to a positive reaction during the course of the illness.

Although the majority of the patients in this series were admitted in the later stages of the infection there is evidence from the numbers admitted in the first three weeks of the disease that the complement fixation test becomes positive early in the infection in a high proportion of cases

Negative results were most commonly obtained in very young children in whom there seems to be a poor antibody response Other apparent causes of a negative reaction were short duration of the disease very severe infection or presence of complications and anticomplementary sera

The intradermal test failed to give specific results A high percentage of patients with whooping-cough gave positive *reactions but so also did a group of* control patients with no history of whooping cough There was no correlation between the intradermal test and the complement-fixation reaction

This work was commenced in Belvidere Hospital Glasgow in December 1934 with the kind permission of Dr A S M. Macgregor medical officer of health for Glasgow and Dr Thomas Archibald medical superintendent The complement-fixation tests were carried out in the bacteriological department of the Royal Infirmary Glasgow under the personal supervision of Dr Robert Cruickshank bacteriologist to the Royal Infirmary to whom I am indebted for animal inoculations and for revision of the text

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GREENOCK ROYAL INFIRMARY —At the annual New Year's Day meeting of subscribers to Greenock Royal Infirmary it was announced that the directors had adopted a scheme for extending the Larkfield Hospital to provide 50-60 additional beds The chairman Mr D N Ferguson said the proposed extension would do away with the waiting list though they were more fortunate than many hospitals in having only 11 on their list Various substantial legacies and gifts had been received by the hospital during the year and the income from all sources had increased. He hoped that the final statement for the year would show that the debit balance that had accumulated during the years of trade depression had almost gone

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NÆVOCARCINOMA OF THE SKIN AND MUCOUS MEMBRANES

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NÆVOCARCINOMATA have for many years interested pathologists because of their colour and physicians because of their generally fatal result The many theories put forward about the origin of their pigment and the derivation of their characteristic cells have led to a confused nomenclature but clinicians are all agreed on their extreme malignancy

An analysis of 25 cases admitted to the Middlesex *Hospital during the years* 1928–35 *together* with some cases of benign melanomata, has been made in order to study the histology to correlate the histological and clinical types with prognosis and to emphasise the clinical features In the discussion on treatment more recent cases have been included and no attempt has been made to give a statistical survey

The term nævocarcinoma was introduced by Unna to cover the group of malignant tumours previously known as the melanoblastomata Controversy has raged as to whether these tumours are carcinomata or sarcomata as they may consist of cells whose appearance suggests epithelial or connective tissue origin (Unna 1893 Ewing 1930 Dawson 1925 and Masson 1926) and some authorities recognise two types the melanocarcinoma and the melanosarcoma. Both are usually characterised by the presence of pigment but the problem is complicated by the occurrence of tumours histologically identical but without pigment Cases have been noted where the primary growth is pigmented whilst the secondary deposit is not or where the primary tumour is non pigmented whilst the secondary deposit is deeply coloured

BENIGN PIGMENTED TUMOURS

Benign pigmented tumours are extremely common Pack quoted by Adair (1936) in a careful clinical investigation found that every individual has at least 20 pigmented spots on his person. These spots are important for two reasons—they may cause disfigurement or become malignant

Disfigurement —Fifty per cent of these tumours occur on exposed surfaces of the body—i e face neck, and arms—and the patient seeks advice for cosmetic reasons The safest and best procedure in these cases is a thorough and clean excision with a scalpel as there is abundant proof that trauma in the form of electrodesiccation and burning with carbon dioxide snow may excite a malignant change They are not radiosensitive although a hairy mole may be depilated

Malignant change —Twenty per cent. of our cases of nævocarcinomata arose as a malignant change in a previously benign melanoma As Sampson Handley has pointed out the chances of a benign melanoma becoming malignant however must be very small, at least some thousands to one The points of practical importance are: (1) Which type is liable to become malignant? (2) The factors exciting malignant change (3) The clinical evidence of malignant transformation, since histologically it may be very difficult to be certain whether a mole is benign or malignant

Types —In our cases the following clinical types occurred —

1 A diffuse flat pigmented type
2 A raised hard nodular type, often papillary
3 A soft raised nodular type
4 A hairy circumscribed type

Site —The majority of these apparently benign melanomata occurred in the upper half of the body, their sites being cheek (2 cases), cervico dorsal region (1 case), upper abdomen (1 case), and sole of the foot (1 case) Of these 5 cases one, the hard raised nodular type with a papillary surface, had progressed to a squamous celled carcinoma In this type the cells are differentiated along the line of squamous epithelium and are only secondarily pigmented There were 3 cases of the soft raised type that became nævocarcinomata, being raised they were subjected to trauma and exposed to constant friction which was probably a potent factor in exciting malignant change The fifth case was of the diffuse flat type on the upper abdomen, was subjected to friction by tight clothing, and was also a nævocarcinoma

Signs of malignant change presented themselves in one of the following forms —

1 Increase in size of the original tumour
2 Ulceration
3 Hæmorrhage
4 Appearance of nodules in the skin around the original tumour
5 Enlargement of lymph glands without change in the original tumour

ACQUIRED NÆVOCARCINOMATA

Out of an average of 800 cases of malignant disease seen annually at the Middlesex Hospital during the years 1930 to 1935, there were about 6 cases of nævocarcinoma a year Their ages varied from 19 to 81, the greatest incidence being the sixth to seventh decades Both sexes were equally affected Clinically demonstrable secondary deposits were present in 60 per cent of the cases when they first sought advice, and one case developed inoperable glands while awaiting admission to hospital. In one case wide spread metastases made themselves apparent clinically during the 14 days after the surgical removal of the primary growth

Clinical types —

1 Nodular, papillary, or warty
2 Pedunculated
3 Associated with neurofibromatosis
4 Ulcerated
5 Subcutaneous nodular
6 Glandular enlargement, no primary lesion found

Some cases are difficult to assess as truly acquired, since the congenital type may be subcutaneous and latent

Sites —In our series the acquired nævocarcinomata occurred at random on skin and mucous membranes face (4 cases), ear (2), palate (1), nasal mucous membrane (1), chest (1), abdomen (2), arm (5), thigh (3), and lower limbs (6) No case of nævo carcinoma occurred in normally pigmented areas, such as the axilla, areola of the nipple, linea nigra, or anal region

Features —Of the 25 cases, 8 showed non pigmented tumours The ulcerated type commenced as a raised nodule the centre of which broke down to leave an indurated edge In many, owing to rapid growth, the edge was softer than in the squamous epitheliomata Some of the non pigmented clinical types had a slight black rim at the edge of the ulcer which gave the clue to their nature In some of the other cases there was no central degeneration, a soft, raised, bleeding tumour being exposed when dressings were removed There were 2 cases in the series associated with multiple nodules on the abdomen and thighs, which followed the course of subcutaneous nerves and were diagnosed clinically as multiple neuro fibromata One of these cases had a nodule on the thigh which was cystic and pigmented. There was only one case in which histological examination of an enlarged gland revealed nævocarcinoma and where a primary could not be found

Histology —Material consisting of skin and lymphatic glands was examined from 23 cases of nævocarcinoma Three types of tumour cell were distinguished —

1 The "squamous" type is named because of its superficial resemblance to the cells of squamous epithelium The cell is irregular or polygonal in shape with an eosinophilic cytoplasm and nuclei variable in shape and staining intensity, showing mitotic figures

2 The "spheroidal" type is so named because it resembles cells occurring in spheroidal-celled carcinoma These cells consist almost entirely of large, pale staining reticulated nuclei, often showing mitosis, and a minimum of cytoplasm

3 The "spindle" type resembles sarcoma cells The nuclei are irregular in shape and size with mitoses and little cytoplasm

Two distinctive arrangements of tumour cell were encountered

The papillary type, in which the tumour cells lay in loose papillary formation, in relation to a connective tissue stroma which appeared to be part of the growth, as distinct from connective tissue of the invaded tissue This arrangement was largely favoured by the "squamous" type of cell (Fig 1A)

Closely packed masses of tumour cells with little or no stroma, a formation largely adopted by the "spheroidal" type of cell (Fig 1B)

Certain growths showed no definite arrangement and were in the nature of a diffuse infiltration Where there was a definite arrangement in the primary growth it persisted in the lymphatic gland metastases in some cases The following combinations of cell type and arrangement were met with —

1 Papillary arrangement of squamous type of cell 13 cases
2 Masses of "spheroidal" type of cell 5 cases
3 Masses of "squamous" type of cell 3 cases
4 Masses of "spindle" type of cell 2 cases

Pigmentation —In the 23 cases 11 tumours were pigmented, and in one case pigment was present in a lymphatic gland metastasis from an apparently non-pigmented primary The pigment appeared to be deposited in the tumour cells themselves, in the "squamous" and the "spindle' cell types of growths

Benign pigmented moles —Examination of sections of benign pigmented moles led to the following conclusions (1) All three types of cell "squamous," "spheroidal," and "spindle" occurring in nævocarcinoma could be recognised (2) There was no histological difference between cells of the same type in benign and malignant growths, barring the greater frequency of mitosis in the latter (3) The majority of benign growths showed a mixture of squamous cells in papillary arrangement in the superficial layers with masses of 'spheroidal" cells in the deeper layers

Malignant change in congenital moles—In 4 of our 25 cases there had been sudden rapid growth of pigmented moles which had been present for 20, 25 34 and 40 years a history of trauma being definite in one case No histological difference could be detected between these growths and those apparently arising de novo (Fig 2)

Biopsy in doubtful cases—Darier and Ravaut (Darier 1936) state that a biopsy in a doubtful case should never be performed as the histological picture is difficult to interpret and the trauma may be a factor in precipitating a malignant change in the tumour Such cases should be treated as nævocarcinomata

TREATMENT

Surgery—The majority of primary tumours were excised with the scalpel or diathermy knife In all cases where possible whether there were palpable glands or not the regional lymphatic glands connected with the primary tumour were excised All tumours in which a local excision was done recurred either locally or in the neighbouring skin and necessitated a second operation In some cases the primary *tumour secondary metastases and the connecting* fascial lymphatic channels were excised In one case of primary nævocarcinoma of the foot amputation through the lower third of the femur was performed, together with a wide radical dissection of the inguinal glands being the only means of ensuring complete removal The glands were not invaded and this case is still alive without evidence of recurrence three years later In spite of wide excision some cases advanced rapidly

In a recent case a small congenital mole on the ear which suddenly increased in size was removed locally and proved to be a nævocarcinoma on section The patient was admitted to hospital immediately and a wide excision of the ear was done together with an extensive block dissection of the cervical glands 6 weeks later a recurrence developed in the lymphatic glands of the pre-auricular region and in a gland low in the posterior angle of the posterior cervical triangle

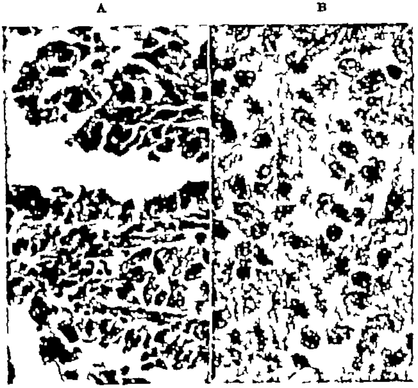

FIG 1.—(A) Papillary type of nævocarcinoma with "squamous" cells (B) Closely packed "spheroidal" type of cells

Radiotherapy—Isolated instances are recorded in the literature of successful treatment of nævocarcinomata by radiotherapy (Holfelder 1929 Pack 1928 Anderson 1935 McEuen 1930) The French school of dermatologists however state that the tumour is so radioresistant that radiotherapy is contra indicated Even surgical excision is condemned as being insufficient and as leading to a false sense of security and they advise treatment by diathermy coagulation We have found some cases to be sensitive to gamma rays of radium and to X rays. The methods of application depended upon the site of the primary tumour

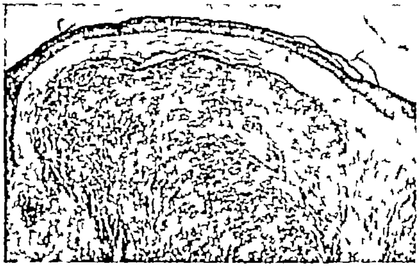

FIG 2.—Showing squamous cells in papillary arrangement in superficial layers and spheroidal cells in the deeper layers.

CASE 1—Female aged 35 with 6 months history of slightly pigmented raised tumour on dorsal surface of the big toe with enlarged glands in the groin The primary was treated by a surface application of radium on a Nidrose applicator a dose of 6000 *r* units being given in 10 days The reaction proceeded to a moist desquamation with rapid healing and disappearance of the original tumour The inguinal glands were excised and a post operative course of deep X ray therapy given There was no recurrence to date 9 months later

CASE 2.—Male, aged 26 with 9 months history of an ulcerated growth fixed to the hard palate and alveolus Treated by surface application of radium on a dental applicator receiving a dose of 7000 *r* in 10 days, together with 118 hours by a 1 gramme unit to the neck in 32 days The primary lesion healed satisfactorily and there is no recurrence to date 8 months later

CASE 3—Male aged 63 with 3 months history of an ulcer on the thigh with a recent lump in the groin. The primary was treated by deep X ray therapy receiving a dose of 8000 *r* in 6 weeks 100 kv 6 mA; distance 40 cm The primary lesion healed rapidly while undergoing treatment but recurred within three months on the margin of X ray pigmentation

Of other cases treated 1 case with fixed inguinal glands became operable 1 case with a nævocarcinoma of the nasal mucous membrane responded well to teleradium therapy and 1 case with a large recurrence in the dorsal region responded well to surface radium treatment; the tumour became smaller and flatter and ultimately disappeared Many cases are definitely radioresistant No criterion of radio sensitivity has been found by histological examinations except that the non pigmented tumours appear to be more sensitive than the pigmented If pigmentation is an index of cell activity and therefore differentiation it would agree with the suggestion that non pigmented tumours being undifferentiated are more malignant (see prognosis) and possibly more radiosensitive

PROGNOSIS

The prognosis of nævocarcinoma is generally considered to be very poor All our five undoubted congenital cases are alive and well without recurrence, 1 for 5 years, 3 for 2 years and 1 for 1 year after treatment

Of the 20 "acquired cases," 15 are dead, 1, 7 years after treatment, from senility, 1 after Cæsarean section for spinal metastases 2 months after excision of the nævocarcinoma, 8 cases in the first 2 years after the onset of the illness, and 4 of these in the first year, while the remainder died within 5 years All these cases received treatment in the form of surgery or radiotherapy, and in one case alone was the disease so advanced that palliative surgery only was attempted In 3 cases there were local recurrences in the first year, and in 2 cases in the second year after treatment In 2 of these cases the recurrence was re excised more radically but recurred again within 12 months In 2 cases inoperable glandular metastases occurred within 6 weeks of seeking medical advice

Of the 5 cases who are still alive the survival rate is as follows 1 case, 7 years, 1 case, 6 years, 2 cases, 4 years and 1 case, 2 years In 2 of these cases recurrences occurred in the first year after treatment and received yet more radical surgical treatment

As Ravaut points out the results of treatment vary with the stage of the disease at the time the treatment is applied If the disease is local and the treatment radical, the results are excellent, and even if the glands have been invaded there is still a chance to eliminate the disease as dissemination occurs by the lymphatic system and blood dissemination is rare

Relation of histology to prognosis —Certain conclusions may be drawn from Tables I and II embodying length of history, survival time, and histology

TABLE I

Cases which Died within 3 years after Treatment

Case	Length of history	Survival	Histology	Pigment
1	8 mths	7 mths	Papillary squamous	0
2	?	10 mths	Papillary squamous	0
3	6 wks	Under 1 yr	Papillary squamous	0
4	6 wks	Under 1 yr	Papillary squamous	0
5	3 mths	Under 1 yr	Masses squamous	0
6	7 mths	Under 1 yr	Papillary squamous	+
7	?	Under 1 yr	Papillary spheroidal	+
8	1 mth	10 mths	Papillary squamous	0
9	4 mths	3 yrs	Papillary squamous	0
10	?	3 yrs	Masses squamous	+
11	Few mths	3 yrs	Masses squamous	0

TABLE II

Cases, Congenital and Acquired, which Survived 3 years without Recurrence

18	8 mths	4 yrs	Squamous no arrangement	+
19	18 mths	4½ yrs	Papillary squamous and masses spindle	0
20	20 yrs (cong)	5 yrs	Masses spheroidal	+
21	6 mths	6 yrs	Masses spheroidal	+
22	6 wks	7 yrs	Masses spheroidal	+

Thus of the 11 cases that died, 8 had non pigmented growths and 10 had growths of the squamous type of cell, of which 7 were in papillary arrangements Of the 5 cases which survived 3 years or more without recurrence 4 had pigmented growths, and the fifth case had glandular metastases which were pigmented, although the primary growth was apparently non pigmented Growths of the "masses of spheroidal cell" type occurred in 3 of the 5 cases, as contrasted with only one spheroidal cell tumour in the 11 cases that died In this connexion it is interesting to note that 'spheroidal' cells are predominant in the deeper parts of the benign pigmented moles, as mentioned above

Although the series of cases is small the following suggestions are made (1) That the non pigmented papillary "squamous" cell growth is the most malignant (2) That the pigmented masses of "spheroidal" cell growth is the least malignant (3) The presence of pigment in a growth appears, ceteris paribus, to be more favourable than its absence

CONCLUSIONS

A review of the 25 cases of nævocarcinoma at our disposal has impressed upon us that improvement in results can only be achieved by attention to the following points —

Prophylaxis —The removal with a scalpel of out growing pigmented congenital tumours exposed to friction by shoes, clothing, or toilet

Urgency of treatment —The original tumour has been known to double its size within 48 hours and the disease should be included among the "surgical emergencies"

Radical surgical removal —However small the primary lesion, a wide excision with at least 2 in. of normal skin, together with an extensive radical dissection of the lymphatic glands and fascia is essential Where this necessitates amputation of a limb it should be advised without hesitation

Radiation treatment —The fact that many tumours are radiosensitive, although no criterion of sensitivity has been found, seems to us sufficient argument that a full carcinoma lethal dose should be applied in all cases, and even where radical surgery is possible this course of treatment should be given as a post operative measure We are of opinion that radiotherapy has much wider scope in the treatment of nævocarcinoma than its limitation to advanced and inaccessible cases

Careful and frequent post-operative observation

Our thanks are due to the members of the honorary surgical staff of the Middlesex Hospital and to Prof James McIntosh, director of the Bland Sutton Institute of Pathology for allowing us to study these cases

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FUCHS SERUM PROTEOLYSIS TEST FOR MALIGNANCY

A REPORT OF 170 EXAMINATIONS

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MOST of the serodiagnostic methods devised for detecting malignant disease fall into one of the following groups —

1 Those involving complement fixation and related phenomena

2 Those involving flocculation or separation of protein or other elements by various reagents

3 Observations utilising injections of vaccine types of extracts

4 Tests involving analyses for specific chemical constituents of serum—e.g cholesterol and cholesterol esters, fibrin, fatty acids magnesium.

5 Physico-chemical methods involving measurement of pH surface tension osmotic resistance and electric charge determination on corpuscles, coagulation time, sedimentation rate &c.

6 Reactions dependent on enzyme changes—e.g Abderhalden's reaction and modifications, the Freund Kaminer cell cytolysis test the lipolysis test of Shaw Mackenzie and the proteolysis reaction of Fuchs

Some of these tests have proved useless in practice others, while yielding a variable proportion of correct results are far from specific and probably indicate the presence of cachexia anæmia, and toxæmia rather than the cancer which has caused them

It seemed to me probable that the reactions which depend on enzyme changes were the most likely to afford means of biochemical detection of malignant processes Some work on the augmentation of pancreatic lipolysis by serum (Woodhouse 1932) having yielded no satisfactory results I decided to try the protein enzyme test described by Fuchs (1926) which seemed to offer greater possibilities than any other It is true that the Abderhalden reaction in its original form whether carried out by chemical or physico chemical methods has been adversely criticised but actually the Fuchs test depends on a different aspect of the immunological thesis in that the observed proteolysis is produced by the interaction of cancer serum on non-cancer protein or vice versa—i e the reaction is heterologous in type

In 1930 Wright and Wolf investigated many of the details of the test Of over 100 cases examined about 86 per cent gave correct results and in 20 non malignant cases the result was correctly negative in every instance. Cadness and Wolf (1934) carried out further observations on the influence of such factors as radiotherapy heat, and alcohol Fuchs and Devrient (1932) produced evidence that the reaction is dependent on a true antigen antibody interrelationship and this was further confirmed by Fuchs and Kowarzyk in 1933 who found that intravenous injections of homologous serum containing cancer antigen caused the serum of normal men to give a positive Fuchs reaction over a period of six months Falkenhausen (1932) carried out the test in 80 cases without previous knowledge of the clinical findings and obtained correct results with all sera. Chrometzka and Gottlebe (1932) investigated 60 specimens 26 of them were from cancer patients and 24 of these proved positive while all the rest were negative They were able to enhance the proteolysis by using ultra filtered sera and obtained 22 correct results in a corresponding number of samples treated in that way They concluded that this reaction was the most dependable serum diagnostic test so far devised for cancer In 125 patients (excluding œsophagus cases) Jedlicka and Weichherz in 1934 obtained 93 per cent. correct results by the Fuchs reaction and Kafka (1934) in 56 patients had 51 correct (91 per cent) while 30 non cancerous sera yielded 100 per cent. correct results In 1933 Hing stated that in all, some 3000 tests have been carried out by various investigators using the Fuchs reaction and that correspondence with the clinical findings of 90–92 per cent. was observed.

Some of the difficulties regarding the test were removed by Fuchs (1932 a and b) who showed that the fibrin substrate might be replaced by the dried protein coagulum obtained by the trichloracetic acid precipitation of suitable serum The technique was further simplified by the application of a colorimetric method of estimation of the rest nitrogen (Fuchs and Falkenhausen 1932) instead of the original iodometric technique.

METHODS

Fuchs (1936) has lately described his test in detail and this should be followed precisely but as my own work was almost completed before his latest description appeared I will give an account of the method as I actually employed it.

The substrates were produced from the serum of healthy persons or of known cancer patients, the proteins being precipitated with 10 parts of 2½ per cent trichloracetic acid and washed several times with trichloracetic acid followed by distilled water They were dried at 40 C., powdered and tested for their proteolytic reaction on known normal and cancerous sera. A number of satisfactory proteins have been tested but two cancer and two normal preparations have been utilised for practically the whole of the tests described in this paper

For the diagnostic tests 10 c.cm. samples of blood were withdrawn from the patients by a sterile syringe after 12 hours fast and exactly 0·5 c cm of the clear centrifuged, non hæmolysed serum placed in three similar tubes 3½ in. by ½ in 5 mg of the protein substrates of normal and cancer types respectively were weighed into two of these This quantity has been shown to be a large excess so that exact weighing is not necessary The three samples were incubated at 40 C in a moist chamber for 24 hours and the proteins then precipitated by adding 3 0 c cm. of water and 0·50 c cm of 25 per cent trichloracetic acid After standing for 20 minutes and filtering through a hard filter paper 2·0 c.cm of the clear filtrate was digested with 0 5 c cm phosphoric-sulphuric acid mixture (300 c cm 85 per cent phosphoric acid + 100 c cm pure sulphuric + 50 c.cm 5 per cent copper sulphate solution) and then the non protein nitrogen estimated by adding 14 5 c cm of water and 10 c cm of Nessler solution and matching with a suitable ammonium sulphate standard in the colorimeter All these quantities were measured by means of carefully standardised pipettes and accidental contamination of all glassware was scrupulously avoided. Since the significant change is not less than 3 mg per 100 c cm the proteolysis is measured with sufficient accuracy by this means, provided that the processes are carried in identical fashion in all tests Particularly in the nesslerisation process is it necessary to avoid the presence of the slightest turbidity in the liquid. The use of porous pot is undesirable for preventing percussion in the combustion process and the addition of a few fragments of pure broken silica was found to be efficacious.

The Nessler solution was prepared from mercury iodine and potassium iodide and the alkalinity carefully standardised so that in the final colourising process the product was clear and remained free from deposit or cloud for at least half an hour The complete combustion and nesslerisation operations were carried out in the same Pyrex glass tubes (8 in by 1 in) and there was thus no error due to transference

The colour comparison was carried out in a dark room employing a lamp house and blue screen; the standards for matching were prepared from pure ammonium sulphate solution 0 1886 g per litre For comparisons with sera containing the normal non protein nitrogen value 2·0 c cm. of this was utilised in a final volume 25 c.cm

The interpretation of the analyses is based on the fact that serum from non malignant persons gives zero or slight proteolysis with normal human blood protein but a greater proteolysis with the blood protein from cancer patients Inversely a cancer serum causes a much greater proteolysis of normal protein It is necessary to exclude tuberculosis syphilis and certain chronic regenerative processes from the possibilities, since these conditions may give proteolytic reactions on normal protein They may be differentiated from the true malignant reactions by conducting blank with syphilitic tuberculous" protein &

RESULTS

In the majority of the pathological cases investigated, the clinical diagnosis was not known until after the test was completed, in many cases a considerable time elapsed before the tentative diagnosis was finally confirmed

TABLE I—*Non malignant Cases*

Clinical diagnosis	Mg N_2 per 100 c cm			Reaction
	(*a*)	(*b*)	(*c*)	
Healthy normal	49	50	55	–
? Rodent ulcer (section normal)	25	28	33	–
Menopausal hæmorrhage	26	30	35	–
Ulcer of throat	35	40	46	–
P M no malignancy found (pneumonia)	58	71	65	+
Simple tumour of ventricle (non malignant)	37	37	42	–
	32	35	38	–
Normal healthy	29	32	36	–
„ „	29	30	—	–
Gonorrhœa	27	29	34	–
Normal healthy	17	20	25	–
Ulcer soft palate	35	38	42	–
Normal healthy	30	35	40	–
Papilloma of tongue (section normal)	19	21	24	–
Normal healthy	14	17	20	–
„ „	18	21	24	–
„ „	34	36	39	–
„ „	26	29	32	–
Diabetes	32	34	39	–
Lead poisoning	26	27	—	–
Cardiac disease	49	04	68	+
Hæmolytic jaundice	90	92	98	–
Arthritis	33	37	42	–
Gastric ulcer	31	33	37	–
Pernicious anæmia	24	27	33	–
Gastric ulcer	18	22	26	–
Colitis	16	18	24	–
Gastric ulcer (G P I)	24	28	33	–
Menopausal hæmorrhage	17	19	24	–
No neoplasm found P M	26	28	32	–
Asthma erysipelas	35	48	40	+
Vaginal hæmorrhage (no sign of neoplasm)	25	26	30	–
Diabetes	125	130	138	–
Cerebral degeneration	64	72	70	+
Ovarian cyst	35	36	42	–
Ulcer of stomach	35	38	43	–
Chronic cholecystitis	32	35	39	–
Menorrhagia	33	35	40	–
Diverticulitis	26	30	35	–
Normal healthy	30	30	36	–
Pernicious anæmia	36	38	40	–
Venereal disease	22	22	26	–

Tables I, II and III (*a*) (*b*) (*c*) = Rest nitrogen per 100 c.cm of serum—
After incubation alone
After incubation with normal protein substrate
After incubation with cancer protein substrate
P M = post mortem

A total of 170 sera have been examined by this method, and up to the present the diagnosis in 120 is sufficiently established (usually by operation, histological or post mortem examination) for comparison with the serum reaction These comparisons are set out in three Tables, comprising the non malignant cases (Table I), the untreated malignant cases (Table II), and the malignant cases previously treated by irradiation (Table III) These serve to indicate the variety and types of disease in the patients examined and the measure of the proteolysis encountered in all cases clinically diagnosed

The following are protocols of two tests with normal and cancer serum respectively —

PROTOCOL 1

(*a*)—*Rest nitrogen after incubation at 40° C for 24 hours*

2·0 c cm filtrate (= 0 25 c cm serum)
Final volume for Nessler comparison = 25 c.cm
Standard ammonium sulphate = 2·0 c cm = 0·08 mg
Volume of standard solution = 25 c cm
Colorimetric readings {standard = 20·0 mm
solution = 18 3 mm

$$\text{Rest nitrogen} = 0{\cdot}08 \times \frac{100}{0\ 25} \times \frac{20}{18\ 3}$$
$$= 35 \text{ mg per } 100 \text{ c cm}$$

TABLE II—*Malignant Cases*

Clinical diagnosis	Mg N_2 per 100 c cm			Reaction
	(*a*)	(*b*)	(*c*)	
Sarcoma of femur	30	64	—	+
Carcinoma of breast (glands)	32	58	—	+
„ breast	25	28	29	–
Epithelioma of tongue	28	38	29	+
Ditto (recurrent)	36	53	39	+
Epithelioma of mouth	30	49	—	+
Carcinoma of œsophagus (glands)	28	43	32	+
„ breast (recurrent)	27	34	29	+
„ bronchus secondary pancreas	40	54	44	+
Epithelioma of tongue	37	46	34	+
Carcinoma of breast	36	43	38	+
Recurrent carcinoma of rectum	29	40	—	+
Carcinoma of ovary	38	49	42	+
Malignant growth in pelvis	43	58	46	+
Epithelioma of anal canal glands in groin	35	53	—	+
Carcinoma of breast (recurrent)	25	30 5	28	±
„ cervix	34	40	34	+
Epithelioma of nipple	44	49	45	+
„ penis	21	30	22	+
Carcinoma of stomach	34	37	37	–
Epithelioma of tongue	37	48	40	+
„ lip	29	38	30	+
Colloid carcinoma of breast	31	41	32	+
Bilateral carcinoma of breast	32	41	34	+
Epithelioma of tongue	37	35 6	37	±
Recurrent carcinoma of breast	39	48	39	+
Carcinoma of lip (early)	44	49 8	47	±
„ breast	34	50	39	+
Ditto (glands in neck)	34	44	36	+
Carcinoma of breast	19	29	22	+
„ „	56	64	60	+
Ditto (recurrent, glands in axilla)	37	52	38	+
Carcinoma of cervix	36	78	40	+
Epithelioma of hand	38	45	40	+
Carcinoma of cervix	98	40	96	+
Adenocarcinoma of ovary	23	29	23	+
Carcinoma of stomach	41	52	43	+
„ colon	48	55	50	+
„ stomach	34	45	37	+
Tumour (malignant) of spinal cord	56	66	59	+
Carcinoma of stomach	24	32	26	+
Inoperable widespread carcinoma	35	48	40	+
Epithelioma of vulva	30	39	31	+
Carcinoma of œsophagus	25	53	30	+
„ lung	30	34	35	–
„ stomach	25	33	—	+
„ „	35	53	—	+
„ ventricle	30	37	32	+
„ stomach	30	37	30	+
„ breast	28	34	28	+
Ditto (secondaries in spine)	29	34	29	+
Recurrent carcinoma of breast	34	38	36	+
Epithelioma secondaries in groin	32	40	36	+
Carcinoma of cervix	27	34	29	+
„ head of pancreas	36	59	46	+
Epithelioma of lip	34	56	40	+

N B —It has been made a rule that for a definite diagnosis of malignancy the nitrogen difference with the normal substrate shall be at least 100 per cent greater than the corresponding difference with the cancer substrate

(*b*)—*Rest nitrogen after incubation with normal protein substrate* (*N*1)

Quantities as in (*a*)
Colorimetric readings {standard = 20·0 mm
solution = 17 8 mm

$$\text{Rest nitrogen} = 0\ 08 \times \frac{100}{0\ 25} \times \frac{20}{17\ 8}$$
$$= 36 \text{ mg per } 100 \text{ c cm}$$

(*c*)—*Rest nitrogen after incubation with cancer protein substrate* (*C*1)

Quantities as before
Colorimetric readings {standard = 20·0 mm
solution = 15 3 mm

$$\text{Rest nitrogen} = 0{\cdot}08 \times \frac{100}{0\ 25} \times \frac{20}{15\ 3}$$
$$= 42 \text{ mg per } 100 \text{ c.cm}$$

Therefore —

Proteolysis due to action with {normal substrate = 1·0
cancer „ = 7·0} mg per 100 c cm

Therefore reaction is non malignant in type (Case = ovarian cyst)

TABLE III —*Radiated Cases*

Clinical diagnosis	Mg N per 100 c.cm (*a*)	(*b*)	(*c*)	Reaction
Carcinoma of cervix	30	40	30	±
Sarcoma of arm	33	38	38	—
Epithelioma of ear	36	40	42	—
Recurrent carcinoma of breast	27	29	27	—
Carcinoma of breast	31	34	34	—
	30	35	—	—
Epithelioma of ear	30	31	3	—
lip	28	9	29	—
Carcinoma of breast (amputated previously)	40	43	46	—
Epithelioma of tongue (apparently cured)	30	33	36	—
Epithelioma of lip (12 months previously apparently cured)	23	27	27	—
Rodent ulcer	19	20	20	—
Carcinoma of breast	34	38	36	—
cervix	28	29	—	—
breast	30	35	—	—
cervix	21	24	20	—
	3	40	41	—
	125	130	130	—
Epithelioma of lip	26	2	22	—
	19	2	23	—
Adenocarcinoma of thyroid	40	47	43	+
Epithelioma of face	33	34	36	—

PROTOCOL 2

(*a*)—*Rest nitrogen after incubation at* 40 C *for* 24 *hours*

All quantities as in Protocol 1

Colorimetric readings $\begin{cases}\text{standard} = 20{\cdot}0\ \text{mm}\\ \text{solution} = 20{\cdot}0\ \text{mm}\end{cases}$

$$\text{Rest nitrogen} = 0{\cdot}08 \times \frac{100}{25} \times \frac{20{\cdot}0}{20{\cdot}0}$$

$$= 32\ \text{mg per } 100\ \text{c.cm}$$

(*b*)—*Rest nitrogen after incubation with normal protein substrate* (*N* 2)

All quantities as in above

Colorimetric readings $\begin{cases}\text{standard} = 20{\cdot}0\ \text{mm}\\ \text{solution} = 15{\cdot}7\ \text{mm}\end{cases}$

$$\text{Rest nitrogen} = 32 \times \frac{20}{15{\cdot}7}$$

$$= 40{\cdot}8\ \text{mg per } 100\ \text{c.cm}$$

(*c*)—*Rest nitrogen after incubation with cancer protein substrate* (*C*1)

All quantities as in above

Colorimetric readings $\begin{cases}\text{standard} = 20{\cdot}0\ \text{mm}\\ \text{solution} = 18{\cdot}7\ \text{mm.}\end{cases}$

$$\text{Rest nitrogen} = 32 \times \frac{20}{18{\cdot}7}$$

$$= 34{\cdot}2\ \text{mg per } 100\ \text{c.cm}$$

Therefore —

Proteolysis due to action with $\begin{cases}\text{normal substrate} = 8{\cdot}8\\ \text{cancer} = 2{\cdot}2\end{cases}$ mg per 100 c.cm

Therefore reaction is malignant in type (Case = carcinoma mammæ.)

From the Tables it will be seen that the following results have been obtained —

Total cases	170
Cases with known clinical diagnosis	120
Malignant cases correct	50/53 = 94 %
Non malignant cases correct	38/42 = 90 5 %
Indefinite reactions	3
Total correct results (untreated only)	88/95 = 92·6 %
Radiated cases (positive only)	

It is of interest that the proteolysis test has been positive in external epitheliomas where the extent of the lesions was not great The reaction should therefore be of help in relatively early cases of internal cancer also; on the other hand it is not to be expected that precancerous conditions will be revealed The results are however definitely encouraging and corroborate the conclusion of Bing and Marangos (1934) that the Fuchs reaction is the most reliable of the serum methods based upon quantitative determinations

SUMMARY

In 53 malignant cases examined by the Fuchs proteolysis test 50 correct results were obtained The test also gave correct results in 38 of 42 non malignant cases The serum from patients which had previously received irradiation treatment gave negative reactions to normal protein in almost every instance

My thanks are due to the honorary staff and officers of the Birmingham United Hospital (General Hospital) for coöperation and facilities in obtaining the blood samples and for notes on the cases investigated. The work has been carried out under auspices of the British Empire Cancer Campaign (Birmingham branch)

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— (193 b) *Klin Wschr* 11 1997
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— and Devrient, W K. (1932) *Dtsch med Wschr* 58 1040
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THE INTRACRANIAL PRESSURE DURING BARBITAL NARCOSIS

BY J STEPHEN HORSLEY M R C S Eng
SENIOR ASSISTANT MEDICAL OFFICER AT THE DORSET MENTAL HOSPITAL

A STRIKING contrast is presented by the raised intracranial pressure of natural sleep and the lowered pressure during barbital narcosis This phenomenon was described by Butler (1936) who based his observations on a study of three cases under Evipan sodium anæsthesia It is of interest to confirm and elaborate these observations Three questions at once become apparent Is the pressure effect constant? Is it dependant on depth of narcosis? Is it common to all barbitals? These can be answered only by a longer series of controlled experiments Earlier reports of similar investigations are of limited value in that they fail to differentiate between partial and full narcosis For this reason the report of Epstein and Marvin (1933) is misleading in stating that Nembutal has no effect on cerebro spinal fluid (C S F) pressure Actually this is true only with small doses; it will be shown that full nembutal narcosis produces a profound fall in C S F pressure Furthermore it will be shown that this effect is not specific to evipan but is in fact common to various isomers of barbital

METHOD

The necessary experimental conditions were fulfilled in administering intravenous barbital to a series of one hundred cooperating patients

In each case lumbar puncture was performed in the left lateral position with the head supported at the same level as the lumbar spine Pressures were measured with

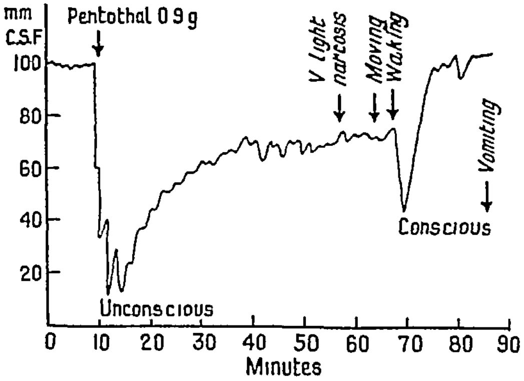

FIG 1.—Typical pentothal effect showing abrupt fall of 90 mm of C S F at moment of unconsciousness and a well marked secondary fall on waking

a vertical glass tube manometer fitted to a special needle Each observation was continued for a period of ½–3 hours and the readings were plotted at 30 second intervals on a graph The punctures were performed without an anæsthetic except in certain apprehensive patients who received a local injection of percaine In many cases there were initial fluctuations in pressure from changes in postural tension For this reason narcosis was not induced until the pressure in the manometer became steady The barbital solution was then injected by the accepted technique until the onset of unconsciousness

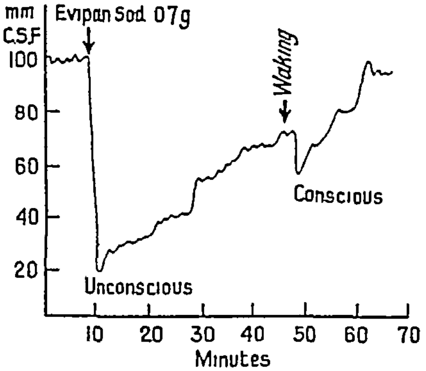

FIG 2 —Same effect with evipan showing abrupt primary fall and a slight secondary fall

RESULTS

The effect of narcosis was an abrupt fall in the C S F pressure to about half its previous level (Figs 1 and 2) This fall either preceded or accompanied loss of consciousness It was constant and indicative of full narcosis Cautious over-dosage produced a more profound fall of C S F many cases reaching zero, and two showed negative pressures (Fig 3) Conversely the administration of a subhypnotic dose of barbital failed to produce any significant change in C S F pressure

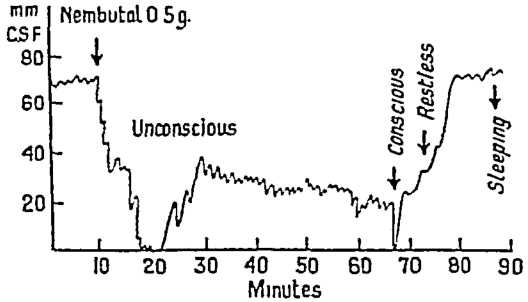

FIG 3.—Cautious over dosage with nembutal producing a profound fall in C S F pressure

In most cases the pressure rose slowly during narcosis but failed to reach its original level until the return of consciousness In more than half the cases there was a distinct second fall at the moment of waking Its exact physiological significance is uncertain, but it appears to be connected closely with the central neural control of sleep The inference is that intracranial pressure is controlled by a central hypothalamic mechanism

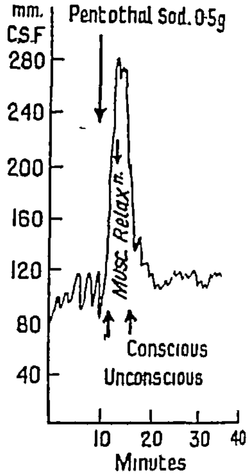

FIG 4.—Paradoxical effect of pentothal in an epileptic.

Paradoxical Effect — In the whole series only one case reacted to barbital with an atypical pressure phenomenon This peculiarity was enhanced by an exceptionally brief narcosis The effect of injecting intravenously 0 5 gramme of Pentothal was an immediate rise in pressure from 120 to 295 mm C S F (Fig 4) This peak coincided with unconsciousness and muscular relaxation There was no apparent venous congestion or respiratory obstruction which would account for the raised pressure It is of complementary interest that within three minutes the patient was awake and alert Repeated observations with evipan and pentothal showed the same effect The only other factor of likely relevance is that this patient suffered from idiopathic epilepsy The causal connexion is obscure but it is reasonable to postulate that the pathological changes sometimes found in idiopathic epilepsy might also involve the neural centres for sleep and intracranial pressure

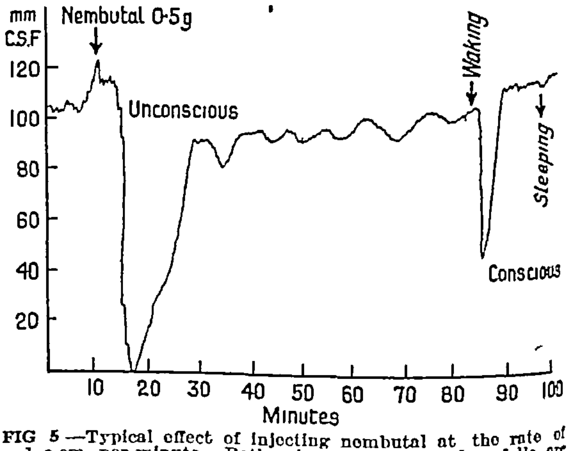

FIG 5 —Typical effect of injecting nembutal at the rate of 1 c.cm per minute Both primary and secondary falls are well marked

COMPARISON OF BARBITALS

The 100 pressure effects observed showed a remarkable uniformity It is of greater significance that this uniformity occurred not only with evipan but with four different barbitals The series comprised 30 cases of narcosis with nembutal, 30 with evipan, 30 with pentothal and 10 with Soneryl sodium Consideration of these cases permits certain tentative conclusions of which the most definite is that the pressure phenomenon is constant and coincides closely with the hypnotic effect of the particular barbital This was most pronounced in those cases that received nembutal by very slow intravenous injection (Fig 5) The pressure would remain steady during the stage of drowsiness and yawning Then usually when about 7 c cm had been injected a steep fall of C S F would accompany the sudden loss of consciousness

The *effects of barbital on the pulse respiration* and blood pressure were studied and found to vary independently of the C S F pressure Finally a study of evipan jactitations and pentothal clonus showed that these phenomena were unrelated to the C.S F pressure

SUMMARY

(1) A C S F pressure effect is described in 100 cases in which there was an abrupt fall at the onset of narcosis succeeded by a slow rise with a second fall at the moment of waking

(2) The effect is common to various barbitals nembutal evipan sodium pentothal sodium and soneryl sodium

(3) It is constant in 99 per cent of cases—the single exception being paradoxical

(4) It depends on full narcosis, and is absent with subhypnotic doses of barbital.

(5) It is suggested that C S F pressure is controlled by a central neural mechanism

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Clinical and Laboratory Notes

A CASE OF LANDRY S PARALYSIS

By A V Russell, B A Camb M.B Liverp

Landry s paralysis is described as beginning with weakness of the legs which often progresses rapidly to complete paralysis Trunk muscles are next affected and then within a few days or even hours the arms The neck muscles are next attacked and finally the muscles of articulation, deglutition and respiration Reflexes are lost but muscles neither waste nor show electrical changes Sensory symptoms are variable and sensation is usually intact though there is sometimes tingling numbness and hyperæsthesia The disease is very often fatal

A girl of 20 was brought to me complaining of feeling tired, of numbness and tinging in her hands and feet of an occasional sensation as though a ball was rising in her throat and of a feeling of depression which made her cry She looked healthy and athletic Her knee- and arm jerks were exaggerated; the pupils reacted briskly to light; she had slight tremor of the hands, and her numbness and tingling appeared to be of the glove-and-stocking type Her hands and feet were cold, the pulse rate 7* per minute the temperature subnormal the tongue clean, the throat healthy and the heart and breath sounds normal She seemed depressed, but not unduly emotional I thought the case was one of nervous debility gave her a bromide and valerian mixture and told her to lead as normal and cheerful a life as possible

Two days later I was called urgently about 8 P M She had been taken to a point to-point meeting that day (which I shall call the first of her illness) and there after a time her legs had failed her On reaching home it was found that her legs had become useless she could *not* walk even with assistance When I saw her the knee and ankle-jerks were absent the Babinski reflex was slight and doubtfully flexor She could just move the toes the ankles very slightly and her knees and thighs not at all The abdominal reflexes were hard to elicit the arm jerks brisk, and the eyes reacted normally to light Temperature 97 F pulse rate 84 She said she had pins and needles in her lower limbs but could feel me touching them with a piece of cotton wool and could appreciate *the difference between the point* and *head* of a pin lightly applied to them

There was no history of a recent attack of influenza or of sore throat and no indication of alcoholism or of contact with any form of nerve poison there was no blue line on her gums, and her throat still appeared normal I called in a consultant colleague and when he arrived about forty minutes later she was no longer able to move her ankles or toes and her lower limbs were flaccid and powerless Nevertheless she was curiously placid and *undisturbed* She was taken at once into a nursing home and on lumbar puncture cerebro-spinal fluid came out under considerable pressure—unluckily contaminated by several drops of blood.

The course of events thereafter was as follows *Second day* Abdominal reflexes abolished; weakness and tingling in hands *Third day* Arm jerks absent patient just able to move arms, but unable even to hold a spoon *Fourth day* Arms and hands quite paralysed slight pain and stiffness in neck pupil reflexes sluggish Blood *count showed* —

Red cells	4 170,000 per c.cm	Polymorphonuclears	76
White cells	11 100	Lymphocytes	[illegible]
Hæmoglobin	73 %	Monocytes	1
Colour-index	0 87	Eosinophils	Nil
		Basophils	1

No morphological abnormalities of red or white cells.

On the *sixth day* she complained that she could not move her head on the pillow that she saw double and had some difficulty in swallowing Her face was expressionless; she spoke in a dull slow voice seemed drowsy and took a long time to answer questions The eyelids drooped, and the pupils reacted to light very slightly if at all During all this time she had been very constipated and found it difficult to pass water After the third day she had an enema every day for a week but catheterisation was only necessary once—on the fourth day *Seventh day* Though her face still lacked expression and she continued to be drowsy there was some improvement in swallowing she could move her head very slightly *from side to side*

Eighth day Some embarrassment in respiration which fortunately soon passed off *Ninth day* Slight return of movement in hands and fingers and increased movement of head and neck; face still expressionless drowsiness and diplopia still present *Eleventh day* Much more movement of hands possible facial expression more alert head moved easily from side to side on the pillow; swallowing without difficulty; left abdominal reflex returned *Twelfth day* Arms moved with some difficulty; patient said they *felt extremely heavy and* tingled *Eighteenth day* Arms moving fairly well hand-clasp weak Could move feet a little and was nearly able to lift head from pillow Double vision had gone pupil reflexes normal; abdominal reflexes normal Massage and electrical stimulation of muscles now begun *Twenty fourth day* Feet and ankles moving much better; able to move knees slightly *Twenty fifth day* Slight knee-jerk response

From now on progress towards recovery was fairly steady though on the thirty fourth day after sitting up in a chair there was a return of paresis in both hands and the patient complained of a tingling sensation in her face; this lasted for four days She began to walk with assistance on the forty-second day and at the end of eight weeks was getting about by herself with a stick Save that she still had a weak hand clasp and was easily tired could be considered almost recovered. The illness was apyrexial throughout

Lumbar puncture was performed every day for the first week, every other day till the eighteenth day once again on the twenty fourth day and a final puncture on the thirty fifth day after the return of paresis in the hands

The first sample of cerebro spinal fluid was blood stained but cultures yielded no growth, protein was 500 mg per 100 c cm globulin in excess, chlorides 0 71 per cent , sugar 0 075 per cent The second sample was browny yellow in colour, and again protein was in gross excess—over 400 mg per 100 c cm The protein content remained at over 400 mg till the twenty fourth day, when it dropped to 140 mg , and the C S F was almost clear At no time were there more than 4 or 5 white cells per c mm The report on the final sample taken on the 35th day day was "Fluid clear , protein 180 mg per 100 c cm , globulin in excess , chlorides 0 7 per cent , sugar 0 05 per cent , cells under 1 per c mm "

At the beginning of her illness the patient was given a mixture containing Hexamine 10 grains thrice daily, but it was discontinued on the fourth day because she disliked it, and it seemed clear that lumbar puncture was the only really useful treatment She said she felt better after each puncture On occasion aspirin or a compound phenacetin tablet was given for discomfort but very little was ever needed Early in the illness we made sure of the availability of an automatic respirator in case the muscles of respiration should fail, but this was not needed

When I saw the patient three months after the illness was over she was in excellent health, without symptoms or disabilities

ACUTE DUODENAL OBSTRUCTION

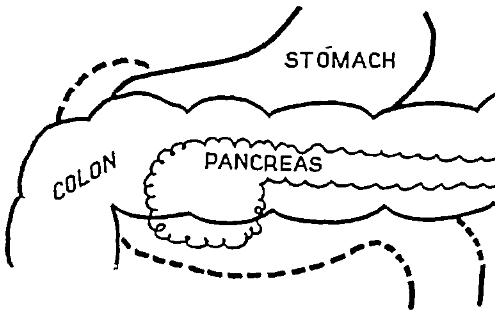
By K S Nigam, M D Allahabad, F R C S Edin , D T M

PROFESSOR OF SURGERY IN THE UNIVERSITY OF LUCKNOW INDIA

It is an old saying that "the abdomen is a temple of surprises", and with all the modern methods of clinical investigation at his command there are still occasions when a surgeon making a laparotomy has little idea of what he will find

A B , aged 16, Hindu, male, vegetarian, unmarried, was admitted to our surgical wards at about 10 A M on Jan 16th, 1936, complaining of three days' pain in the upper part of abdomen and two days' vomiting The history was that with no antecedent trouble whatever, on the morning of Jan 13th he went to defæcate and had a scanty evacuation , he did not strain in the act Simultaneously he felt a mild colicky pain across the upper half of abdomen, and with frequent exacerbations this persisted throughout the day and the night following He stayed in bed, stopped all food, and took some carminative mixture On Jan 14th and 15th the pain became more frequent and severe He vomited about six times on the 14th and eight times on the 15th, and in the evening of the 15th he had an enema without result A particularly restless night followed and he was sent to hospital The only point of interest in the previous history was that two years ago he had suffered from a similar pain which passed off in a few hours, without vomiting

Examination —The patient was thin but wiry his expression was pinched and anxious The abdominal walls were receding but moved freely on respiration The abdominal reflexes were normal and there was no cutaneous hyperæsthesia The epigastric and right hypochondriac regions were tender to deep pressure There was no guarding of muscles but the supraumbilical part of right rectus muscle offered greater resistance to palpating hand than elsewhere During examination an indefinite round mass about 2 in in diameter was felt a hand's breadth to the right of umbilicus , it was tender, moved with respiration varied in size and was tympanitic Within 10 minutes this lump had disappeared and no further trace of it could be detected by any manœuvre or manipulation (It was probably a segment of bowel in spasmodic contraction) Rectal examination showed nothing abnormal , two high rectal enemas, at an interval of an hour, gave no result beyond return of the fluid. The pulse rate was 62–68, the temperature 96 0° F, the respiration rate 24, and the blood pressure 118/64 The urine (spec gravity 1026) gave a positive test for acetone but not for diacetic acid. The leucocyte count was 10,000 per c mm (80 per cent polymorphs and 20 per cent lymphocyte), no abnormality in the number or size of red blood corpuscles was detected



Findings at operation The interrupted line indicates the extent of the hæmorrhagic effusion

Treatment —In view of acetonuria, vomiting, and lack of proper nursing from the start of illness, expectant treatment was adopted with Fowler's position, administration of 5 per cent glucose in saline by proctoclysis as well as intravenous drip, and turpentine stupes to the abdomen In the afternoon the patient had two more severe attacks of colic and vomited twice he passed no fæces or flatus, and the abdomen was slightly distended in the middle His pulse rate rose to 116 and his temperature to 101° F On a provisional diagnosis of acute high intestinal obstruction laparotomy was performed at 6 P M on Jan 16th

Operation —Entry through right paramedian umbilical incision Collapsed jejunum and ileum encountered. No free fluid in peritoneal cavity A transversely elongated oval purplish black mass was found under the transverse colon which was held up with empty stomach and liver pushed above under the ribs This mass was tympanitic The peritoneum on this mass below the transverse colon was incised, and 8–10 oz of tarry blood escaped On mopping this away normal pancreas and duodenum were exposed and thoroughly examined by incising the peritoneum widely , but no abnormality such as a *true cyst of the* pancreas, diverticula, or *ulcers* of the duodenum was detected There was no active bleeding Simultaneously the jejunum assumed a filled up appearance demonstrating that the effused blood had caused mechanical obstruction of the duodenum The superior mesenteric vessels or their branches were not pressing on the duodenum The hæmorrhagic effusion was found to extend proximally to near the pylorus and distally to about an inch beyond duodenojejunal flexure The abdomen was closed in the usual way after bringing out a drain of rubber tissue *through a stab wound* in the right loin across the right renal pouch of Morrison Recovery was uneventful, the drain being removed in 24 hours

Special investigation —On the 16th, after the operation, the bleeding time proved to be 3 mins 45 secs next day it was 3 mins 40 secs The diastase content of the urine, estimated in the pathology department of King George's Medical College, was 20 units per c cm, (Jan 17th), and the pathologist examining tissue, &c removed at operation, described them as blood clot covered with endothelial cells which are probably derived from the peritoneum—a peritoneal blood cyst " Clot culture from the contents of the cyst was sterile after 24 hours' incubation No microfilariæ were detected in the night blood Loewi's test was negative Acetone disappeared from the urine on Jan 20th. Opaque meal skiagraphy on Feb 7th by Dr Raghunandan Lal showed a J shaped type of stomach with no indication of ptosis, niche, or accessory pocket A certain amount of gastric residue was present after 1¼ hours The meal passed rapidly through the first and second parts of duodenum but was held up again in the third part of duodenum. No evidence of ulcer

In this case there is no history of trauma except that the pain started during defæcation which may imply some straining though the patient denies it If he did strain why did hæmorrhage occur round the duodenum? No hæmorrhagic diathesis was indicated and the bleeding time was normal (platelet count not done) The head and body of pancreas were carefully exposed but no abnormality was found there was no fat necrosis or sign of pancreatic insufficiency or irritation. No gastro-duodenal ulcer was found at the operation or was indicated by skiagraphy The cause of the illness thus remains undetermined The patient is at present in excellent health

MEDICAL SOCIETIES

WEST LONDON MEDICO CHIRURGICAL SOCIETY

This society met on Jan 8th at the Vere Hotel with the president Mr **Neil Sinclair**, in the chair and Mr **Eric Pearce Gould** president of the Medical Defence Union opened a discussion on the

Defence of Negligence Actions

A patient had a right he said to expect that his doctor would exercise reasonable skill and care the failure to do so was negligence Complaints of medical negligence were increasing for various reasons The old time mutual confidence between doctor and patient was unfortunately lessening lay people knew more about medical matters particularly about X rays there was a certain news value in the doctor s peccadilloes and the publication of accounts of actions against doctors encouraged others to complain The gravity of negligence actions was *also increasing partly* because juries tended nowadays to award very high damages and partly because recent legislation had extended liability for the results of negligence beyond the person of the doctor to his estate after his death. An action could be brought against a firm of partners for the negligence of one member and it was therefore essential that each member should belong to a defence society and convenient that all should belong to the same society

Negligence actions he continued fell into four groups the first of which comprised actions brought out of pure malice to avoid the payment of fees A summons served by the defence society would often bring payment sometimes outside the court immediately before the hearing Secondly when the act was really negligent a settlement must be made on the best terms at the earliest possible moment Third came the actions in which there was prima facie evidence of negligence but from a medical point of view a good defence If the plaintiff were reasonable it might be wiser to settle or to deny negligence prepare the defence await a moment when the patient s demands were not quite as exacting as they had been and then settle the defence might on the other hand be good enough to take into court with a fair chance of success One cause of such actions was the transfer of a patient from one doctor to another in the middle of a course of treatment—e g a plaster splint for a fracture—planned by the first doctor when it failed the patient might blame the second doctor without good cause Sometimes the society considered the defence to be excellent but the doctor feared that even a successful result would injure his practice; the society would then try to meet his wishes

The fourth and last group consisted of cases in which negligence had clearly been committed but the doctor was not to blame a class which seemed to be multiplying Until a generation ago it had been generally accepted by the profession that the doctor was responsible for all that happened in a case and not so very long ago the protection societies had succeeded in establishing for practical purposes the principle that an anæsthetist was responsible for his own errors and had exonerated the surgeon from liability for injury in matters within the anæsthetist s particular province The time might have come for recognising the responsibility of other assistants. Modern medical work increasingly needed the coöperation of a team of workers each trained in his or her own particular duties It was right and proper that such duties should be delegated to the carefully trained assistants of to-day While no surgeon could be exonerated from seeing that the members of his theatre team were properly trained most medical men would feel that if he did this he was then entitled to rely upon his assistants for seeing that the swabs and instruments were correctly counted A South African appeal court (Van Wyk v Lewis 1924 S.A.L R 438) had given a ruling exonerating the surgeon in a case where a swab had been left in after the theatre sister had reported correct A surgeon ought also to be entitled to rely upon the ward sister not to burn the patient with hot water bottles after he returned to the ward or to remove in due course drainage tubes inserted at the operation A surgeon should not carry quixotry so far as to take the blame for a nurse s negligence merely because her shoulders were weaker than his

In conclusion Mr Pearce Gould suggested that all doctors ought to realise the many pitfalls of medical practice and be increasingly careful A doctor who felt conscience striken should not commit the error of telling the patient how blameworthy he considered himself A doctor should never criticise before the patient or his friends the treatment of another doctor and most important every practising doctor should belong to a medical defence society and pay his subscription regularly; 20 per cent of members were late every year in paying their subscriptions and therefore fell out of benefit for a time A doctor faced with a complaint of negligence should consult his society at once and the first reply to any communication he received should be dictated by their experience rather than by his feelings of the moment Finally having consulted his society the doctor should do what he was told

Mr **C T Le Quesne** K C said that the possible defences to an action for medical negligence were first that there had been negligence but the doctor had not committed it as when a pair of forceps had been left in a patient s body at a previous operation (Crotch v Miles[1]) Secondly the doctor might plead that although the patient was not satisfied he had taken reasonable care and used reasonable skill and had therefore not been negligent; this defence particularly applied in cases where the medical evidence conflicted Thirdly, he might plead that he was not responsible for the negligence of another person The court would always have to hear the evidence, including evidence of the custom governing the particular operation or treatment, and decide whether in all the circumstances the responsibility rested with the doctor or with one of his assistants

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[1] *Lancet* 1930 1 643 06

DISCUSSION

Mr W McAdam Eccles said that many cases were prevented from coming into court by the good offices of the defence societies Nursing coöperations varied in the steps which they took to insure their nurses Some, whose nurses were legally their servants, insured themselves against third party risks He asked who was responsible when a coöperation lent a nurse to a hospital for service in one of its private wards the practitioner who gave her orders, the hospital, the coöperation, or the nurse? Other coöperations, besides insuring themselves, insisted that each nurse should take out an insurance policy The routine of an operation became so much of a habit that it was easy for the surgeon to detect negligence in its performance by any member of the team He himself never left a nursing home or house without making sure that there was nothing in the patient's bed likely to do damage If a doctor was called to give evidence against a colleague he must not hesitate to tell the truth, as he was bound to do by his duty to his profession, the State, and the law

Mr G B Woodd-Walker said that the surgeon was peculiarly open to complaints of negligence in his treatment of fractures The out patient surgeon, treating a patient who was dissatisfied with the treatment of his general practitioner, often found great difficulty in communicating with the doctor without the patient's knowledge It was very important that the hospital surgeon should stand by the private practitioner and not allow the patient to have access to records and films which might possibly support a charge of negligence

Dr Reginald Perkins asked whether a doctor could be charged with negligence for leaving with the patient enough tablets of a hypnotic drug to enable him to commit suicide

Prof V B Green-Armytage related that a married woman, a deaf mute, whose husband was also a deaf mute, had been admitted to his hospital desiring ligation of her Fallopian tubes on eugenic grounds, her husband joined in the request The hospital governors had forbidden the operation, taking the view that it would constitute the criminal offence of maiming Another hospital, however, had admitted her and had allowed an honorary surgeon to perform the operation, to the great and permanent satisfaction of the couple On another occasion he had sterilised, with the consent of her husband a woman who had spent six months in Bethlem Royal Hospital with puerperal mania The man had later threatened an action or prosecution but had been dissuaded by the defence society Prof Green Armytage expressed fear that he had offended against the law or against the husband's legal rights, but mentioned that he had safeguarded himself by performing only a temporary sterilisation—burial of the fimbriated ends in the broad ligament—which could be undone at any time

Mr D Harcourt Kitchin said that there was little authority in this country governing the vicarious liability of a surgeon Perionowsky *v* Freeman (1866, 4 F and F 977) seemed to lay down that the surgeon could not be held responsible if a nurse carried out his orders negligently in circumstances in which he could not supervise or control her actions, when the duty was one which he could properly delegate to her In the case of Van Wyk the court had found the practice of delegating the counting of swabs to the sister to be reasonable, that she was an independent assistant, and that the surgeon was entitled to rely on her count Even that judgment had not, however, exonerated the surgeon for every negligent act of one of the team, and it could only be applied to the particular circumstances of that case In Ingram *v* Fitzgerald[2] the New Zealand Court of Appeal had decided that the surgeon was not responsible for the mistake of a nurse in painting the patient's body with iodised phenol instead of tincture of iodine Such decisions merely laid down the principle that in certain circumstances a surgeon might not be responsible for the negligence of an assistant, they did not do more He asked Mr Pearce Gould what measure of immunity the profession demanded He could not imagine Parliament passing an Act exonerating all surgeons from liability for all negligence of a member of the theatre team, nor any decision of the House of Lords which would extend beyond the facts of the particular case. It seemed probable that the surgeon would always be open to actions for vicarious negligence, and that his legal position would be gradually improved as successive decisions exonerated him in particular sets of circumstances The liability of a coöperation for the negligence of one of its nurses must, Mr Kitchin thought, depend upon the contracts which the patient had made with the hospital, the hospital had made with the coöperation, and the coöperation had made with its nurse In Hall *v* Lees (1904, 2 K B 602), where a patient sued a coöperation because one of its nurses had burnt her with a hot water bottle, the court had found that the coöperation had only undertaken to supply a competent nurse, and not to nurse the patient through her agency The answer to Mr McAdam Eccles's question would therefore probably be that the nurse was in any case liable, the coöperation was not liable if it only undertook to supply a competent nurse, the hospital was not liable because she was presumably doing skilled work which its governors could not supervise or control, and the practitioner was not liable for the same reason He still maintained that the provision of the Law Reform Act, 1934, which gave an aggrieved patient a right of action against a doctor's estate, was not likely to be quite so disastrous as had been represented, because the estate could not claim damages for loss due to the death itself He could not see what right of action a widow could have against a doctor who entrusted her husband with a lethal number of medinal tablets, for she could not claim for loss due to the death, and the patient could not have claimed damages for injury caused by his own act He did not know of any enactment or provision of law which would make a gynæcologist liable to a criminal prosecution for sterilising a woman on medical or eugenic grounds, for the old offence of maiming had consisted only in impairing the efficiency of a man as a soldier A sterilising operation performed without the consent of the woman of course gave her a right of action for assault, as would any other operation

The President mentioned that he had himself been sued for damages caused by a nurse with a hot-water bottle but the Lord Chief Justice had directed the jury that he had no case to answer His practice had not suffered but had increased after this success

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[2] *Brit med J* 1937 1 46

Dr H H SANGUINETTI asked what investigations a doctor might reasonably be expected to perform in deciding whether an operation was necessary and suggested that in many cases a white cell count should be made

Mr HOWARD STRATFORD asked how a doctor should protect himself against an action for not ordering a radiological investigation when the patient had refused to have one

Dr GERALD SLOT said that a prolific source of complaints against physicians was notification of infectious disease Many deaths attributed to the anæsthetic were really due to prolonged manipulation Checks against wrong dispensing were in many nursing homes not carried out as carefully as they might be

REPLY

Mr PEARCE GOULD deprecated the use of bankers orders by members of defence societies for the member might change his bank and forget to make a new order and they were harder for the office staff to check He considered that individual insurance by nurses would lead to many actions being brought which otherwise would not be heard of Hospitals should take steps to prevent patients having access to the notes of their cases In every case in which the doctor considered a skiagram should be taken and the patient refused he should at once put his opinion into writing either by sending a letter to the patient and keeping a copy or by making a note at the time in his own records The doctor must always do what he thought best for his patient, regardless of the possibility of legal complaint The Law Reform Act 1934 was a serious danger to the relatives of deceased doctors and both defence societies now undertook to defend an action brought against the estate of a late member

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MEDICAL OFFICERS OF SCHOOLS ASSOCIATION

AT a meeting of this association on Jan 8th Dr JOHN LAMBERT (Wellington) the president took the chair and Dr E KAYE LE FLEMING opened a discussion on the

Education of the Body in Public Secondary and Preparatory Schools

The first question likely to be raised he said was that of nutrition In *schools of these three kinds* it was improbable that the food would be insufficient in quantity; but even the best diet sheets failed to disclose its quality and the way in which it was cooked and served Unfortunately there were still schools at which fresh fruit was an extra and had to be paid for Growing boys needed a lot of sugar and one explanation of the popularity of the tuck-shop was that boys were conscious of the sugar deficiency of their ordinary diet Spacing of meals was also of prime importance yet he knew one large public school at which after their 1 o clock meal the boys played Rugby football had a shower bath changed re-entered school took their work and got nothing to eat until 6—which he regarded a monstrous As for fresh air its full value would probably not be recognised even in the medical profession without experience of life in a sanatorium The ordinary school curriculum did not allow enough margin for this and there was still a great deal of unhealthy overcrowding in schools where there were dormitories and each boy did not (as at Eton and Harrow) have a room to himself. The main infections in school life were droplet infections spread by coughing and sneezing and in one school with a high sickness rate insistence upon three feet between beds had led to great improvement As to clothing most people wore too *much, though he must make a large excep*tion for the many girls and young women who had adopted a minimum of clothing to their great physical advantage Impact of air on the skin was a real healthy stimulant

The body regarded as a machine controlled by the will, was capable of an almost infinite variety of development especially during the plastic school age But the object of physical training in schools was not to turn out contortionists or figure-skaters but to produce a muscularly balanced body capable of much purposeful energy with a minimum of fatigue; or as the report of the British Medical Association said a balance of body mind, and soul. This balance was well seen in birds in flight slow motion pictures of which were very instructive The first step towards getting the new ideas on physical education incorporated into school life was to induce head masters to believe in its value; at present generally speaking they were insufficiently convinced Who should educate the educators? The interesting attempts now being made to ascertain how much a boy will learn in a given time devoted to mental education compared with what he can learn if part of this time is devoted to physical instruction promised valuable results Head masters would say and with justification that until parents wanted physical training it would be difficult for masters to supply it The fact was that the school doctor must educate his head master and the head master must educate the parents Opposed as Britishers were to dictators two dictators yet held sway the head master and the coroner

Another difficulty concerned the relation of physical education to games The two should be linked together; they could not be carried out under two masters for these would probably be at loggerheads Perhaps the greatest difficulty of all was to find the right teachers Who was there who could go into boys schools and teach physical education on modern lines? Where could such teachers be trained? The answer was practically Nowhere in the country It was very different in regard to girls schools It was a dreadful thing to confess that the remedy was to take a course in Sweden All through the B M A report on the subject it was made clear that physical education needed close coöperation between teachers and doctors since the medical was the most important side But the doctor had almost no opportunity of getting acquainted with physical education though this was a very important part of preventive medicine Science had been defined as measurement yet there was no adequate measure or standard of physical fitness In the simple matter of heart tolerance to exercise each medical man had his own standard and method of test which though of value to himself was of no value to others It was to the universities one looked for help in this matter but so far in vain

The PRESIDENT said that for many years there had been four or five large schools for training teachers of physical education in girls schools whereas for men he knew of only the Leeds Training College

Dr C Watney Roe (St Paul's) said the training contemplated was far more important than mere physical jerks As to diet, though no one in England could be said to be starving there was a striking absence of calcium, iron, and essential vitamins in many diets The work of Dr G E Friend, at Christ's Hospital, showed excellent results achieved at a school by a generous and well balanced diet —Dr Arthur Davies mentioned the work of the College of Hygiene and Physical Training at Dunfermline and Edinburgh It was extraordinary, he said, that physical education should have been so much ignored by the universities —Mr Crocker contended that only those able to have unlimited fresh air could keep their bodies fit —Dr A H Macdonald (Dr Barnardo's Homes) said that, for teaching physical exercises, his institution had secured a very good type of man from Aldershot, and they were very successful with the children

Dr L R Lempriere (Haileybury) said he believed that most of the infections at school did not take place in crowded dormitories at night, but in the house and classrooms during the day It would be a boon if someone would give a handsome contribution to found physical training centres at universities He agreed that until head masters and assistant masters were thoroughly interested in this matter, advocates would be simply marking time His only criticism of the B M A report was the demand that three periods per week should be spent by all youths on this subject, that was asking too much, and was unlikely to be accepted.—Mr Turner advocated a compulsory half hour of sleep or rest in the day

Dr Elwin Nash spoke of the importance of having a proper system of heating in schools He asked whether any figures were available to show the effect of shortening the periods of instruction, comparable with those issued by the Industrial Fatigue Research Board He meant a break in the morning for cocoa and in the afternoon for tea He remarked that he had never met a physical training teacher who had made the boys understand the why and wherefore of what they were required to do —Dr C K Attlee held that the physique of girls was now much better than that of boys —Dr E B Morley said he had often asked himself what was the aim of all this physical fitness, what was the boy making himself fit for? The average boy did not look beyond his ability to play games Was he not, in many cases making himself fit to endure sitting on a stool in a close office many hours a day? Or sitting in the ill ventilated law courts listening to endless arguments? In arriving at the proportion of men unfit for the Army at the outbreak of the late war it must be remembered that much of the examining was done by old doctors who considered the presence of a heart murmur meant absolute incapacity and rejection Not only was it necessary to have regard to what boys were being made fit for, but every effort should be made to render occupations healthy

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Health Centre at Blackpool.—The site of the old Victoria Hospital is being acquired for £30 000 by the Blackpool health committee for use as the health centre of the borough

Lucy Baldwin Maternity Home Stourport —On Jan 5th Mr Baldwin opened further extensions to this maternity home which was the gift of Sir Julien Cahn to Mrs Baldwin who presented it to the Worcestershire county council Sir Julien Cahn has also met the cost of these extensions

ROYAL SOCIETY OF MEDICINE

SECTION OF THERAPEUTICS

At a meeting of this section on Jan 12th, with Dr Dorothy Hare, the president, in the chair, a paper on

Protamine Insulin

was read by Dr H C Hagedorn (Copenhagen) He began by speaking of the change brought about by the introduction of insulin. At first, he said, its success was so great that nobody thought of improving the remedy, but an improved technique had been found desirable in the severer cases with considerable oscillations in blood sugar, which needed careful and frequent examinations The oscillations could be modified by appropriate distribution of the diet and also by better timing of the insulin effect through modifications in the insulin preparations themselves This second method had been thought of as early as 1923, and his institute had taken much interest in it ever since Three ways of retarding the effect of the insulin had been tried first, the emulsification of insulin solution or the suspension of dry insulin in oil, which had not seemed applicable in every case, secondly, the injection of a vasoconstrictor with the insulin, thirdly the injection of the insulin as a more or less insoluble compound The rate of absorption of both soluble and insoluble preparations depended on the concentration and on the volume The insoluble compound differed from the soluble in that the dose could be varied, without altering the volume or the concentration in the liquid phase, theoretically an injection of a suspension of an insoluble compound gave a constant rate of absorption until all the particles were dissolved He had restricted his experiments to those substances that were destroyed or excreted rapidly, fearing that other compounds would sooner or later cause unpleasant surprises Some experiments with tannic acid compounds had been abandoned because of local reactions, but protamine insulins had been found to be non toxic in far greater doses than those to be used in treatment, and had a prolonged action clinically Many protamines had been tried, and salmiridin (obtained from the rainbow trout) had been chosen as suitable Researches by Mr Krayenbuhl into the physical chemistry of protamine insulin compounds had thrown light on the effect of mixing doses of the soluble and insoluble preparations If solutions of protamine and insulin were mixed in varying proportions one proportion was found to which the further addition of either substance (after the production of the first precipitate) would cause the same amount of further precipitation This proportion, called the isophane proportion, was peculiar in that the ratio of insulin to protamine was the same in the precipitate and the solution The isophane proportion was altered by the presence of small quantities of zinc which also prolonged the action of protamine insulin The amount of zinc used in practice was so small that it was generally considered harmless, but the speaker himself only used it for those for whom the protamine insulin alone was not satisfactory The precipitated protamine insulin was stable for many weeks under ordinary conditions and for months in cold storage Dr Hagedorn said that objections had been raised to the name protamine insulinate, because the ending "ate" implied that insulin was an acid radicle In view of the very complicated chemical nature of the substance he had dropped the ending and now spoke of protamine insulin.

Caution had prompted him to treat only a few cases with the new material for the first year Dr N B Krarup had tried the substance in hospital under controlled conditions, carefully observing the blood-sugar glycosuria, and acidosis Graphs taken from these results showed the relatively quick action of the soluble insulin and the more even action of the insoluble The protamine insulin had been used in one daily dose and he thought that all who regarded protamine as harmless would agree that the compound should be used as soon as it was apparent that one daily dose of plain insulin was insufficient Protamine insulin was suitable for evening doses but its effect stopped abruptly and sometimes the evening dose had to be postponed for this reason. Ordinary insulin might be better suited to the requirements of daytime in some cases especially in children, a second dose of the insoluble preparation was useful. The combined use at one time of both types was being tried both in combined and separate injections Patients having protamine insulin said they felt better and less tired and that they had ample warning of hypoglycæmic symptoms which also tended to last longer Surgical cases had been easier to deal with, and Graves's disease occurring in three diabetics had improved astonishingly Many patients who used to be brought to hospital frequently in hypoglycæmic or semi comatose states had kept out of hospital. Treatment however was not successful in every case for some did not react typically

Dr O Leyton referred to the leading part taken by Dr Hagedorn in the evolution of insulin therapy and the boon he had conferred on diabetics by supplying a compound which for many converted a life of hazard into one of comparative monotony Those who had much experience of protamine insulin confirmed Dr Hagedorn's results but some might be unlucky with their first cases In over half of his own cases the prolonged action of protamine insulin had prevented severe hypoglycæmic attacks and also the rise of the blood sugar in the early morning It had enabled him to give only two doses a day to some patients who in spite of much juggling with food had required three or even four doses of insulin hydrochloride a day Single doses of protamine insulin given first thing on waking had kept the blood sugar level to between 0 08 and 0 15 per cent for twenty four hours occasionally this had been astonishingly successful even when a single dose of more than 40 units had been required Naturally the distribution of carbohydrate had to be adjusted about 35 per cent had been given at breakfast two hours after the injection and 50 10 and 5 per cent respectively at lunch tea and the evening meal. The total carbohydrate was often well over 200 grammes In some however hypoglycæmia developed at about 11 A M and in others the insulin was ineffective The variable action of protamine insulin probably depended partly on the site of injection but a few observations of the effect of intravenous intramuscular hypodermic injections and those into adipose tissue had not accounted for the variation Dr Leyton thought that if a patient's condition was well controlled upon two doses of insulin hydrochloride a day not exceeding 12 units in all no change should be made unless for some special reason he could not give himself or be given an evening dose For those who were improving and no longer needed 12 units in two doses a single dose of protamine insulin was advisable

Dr W W Payne said that one girl who had been under his care for a long time at the Hospital for Sick Children Great Ormond street had changed conspicuously since being put on protamine insulin She had been a severe case and very nervous, but now stood up to the accidents of life in a much better way Although it was still hard to keep diabetic children sugar free and although the change to protamine insulin wrought no obvious improvement in physical condition when this was already good the patients themselves said they felt much better He had been trying one daily dose on most of his child patients and often found that they remained sugar free through the night Unlike Dr Leyton he had spread the carbohydrate evenly through the meals He had had one protamine reaction after using freshly precipitated material and had since avoided preparations which had not been made at least a day before. He asked whether a stronger solution could be made A dose of 60–70 units occupied nearly 2 c cm. and was a bulky dose to give to little children

Dr George Graham had had some patients suffering from hypoglycæmia after protamine insulin some of them who had formerly had no warning told him that they could now tell when an attack was imminent He thought the new treatment would be very useful for patients with big variations in blood sugar He wished there were a third type of insulin quicker in action than the hydrochloride

Dr T Izod Bennett had been able to reduce the total amount of insulin his patients were receiving although they were having only one injection a day He had been able to abolish the hypoglycæmia which had commonly developed before breakfast The change in temperament noted in his patients since using protamine insulin had shown him how much the fear of hypoglycæmia had haunted them before and how it had been a cause of nervous irritability He thought the introduction of new forms of insulin was going to make the physician's work much harder He avoided the use of two kinds of insulin in one patient, for he felt that if a patient had two kinds to give himself accidents were bound to happen sooner or later Slow insulin had come to stay but he hoped doctors would not use two kinds at once He expressed regret that the protamine insulin should all come from abroad and that the British manufacturers always walked in the rear of other countries.

Mr F H Carr D Sc speaking on behalf of the manufacturers, said in reply that the British firms were collaborating in the production but had delayed putting protamine insulin on the market at Dr Hagedorn's request until a uniform and well tried product could be issued There was a patent on the preparation which except by the courtesy of Dr Hagedorn or by contravention of the patent prevented them from making it

Dr Hagedorn thought a stronger solution of protamine insulin might be made but he was not sure that its action would be so prolonged A single daily dose was the ideal but infection and other causes often made two doses preferable It had been said that diabetic patients sailed uncharted seas; and he thought the same might be said of their doctors He wished them a happy voyage

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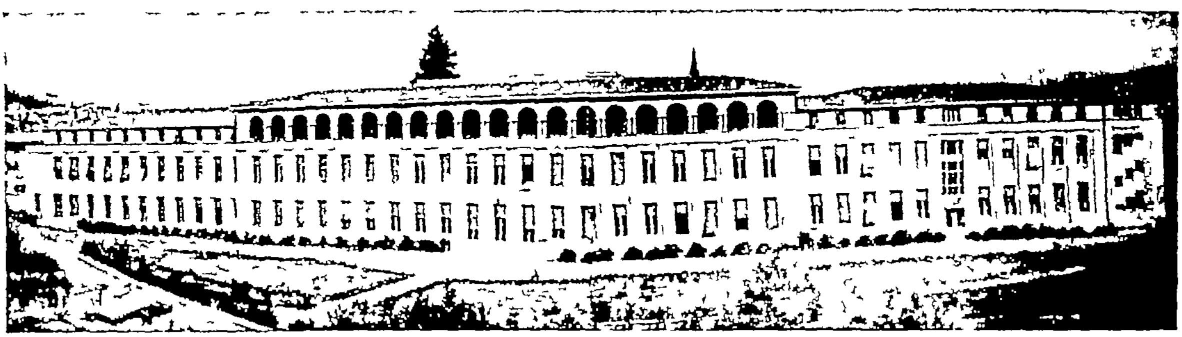
New Surrey Hospital —The Surrey County council is proposing to erect a large hospital in Carshalton with accommodation for 53[illegible] patients to meet the growing needs of the county The nurses home will house 340 nurses



AN ATHENS HOSPITAL

The Marika Eliadi Maternity Hospital was given to the city of Athens by Madame Helena Venizelos in memory of her friend whose name it bears It is a three storeyed building which stands in beautiful gardens looking towards Mount Hymettos The large square entrance hall is of rose-coloured marble, and from it white marble stairways lead to the first floor where there are wards for patients who pay small fees or none at all The colour scheme on this floor is pink and white and each room accommodates ten beds and their cots They are large and well ventilated with big windows looking over the gardens The more expensive rooms are on the second floor and here the colour scheme is green and gold Large windows lead from each room to a wide shady verandah that runs the length of this floor There are three operating theatres, three large labour and delivery wards, consulting rooms, and an out-patient department where patients may attend three times weekly The administration rooms, the staff dining-rooms, and the all electric kitchens are on the ground floor

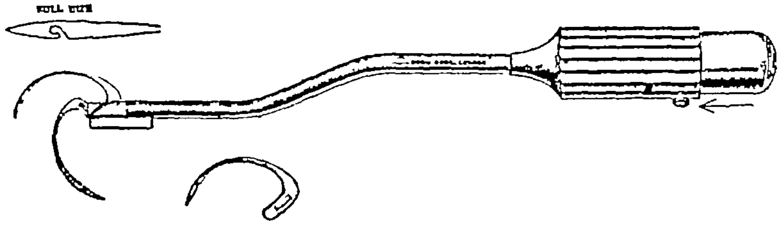
The total number of beds in the hospital is 130, of which 50 are reserved for non-paying patients, there are 80 to 100 cots About 2000 babies are born yearly, and many gynæcological cases are also treated Neither money nor trouble has been spared in making the equipment and arrangements as good as they can be made and Madame Venizelos has provided funds to maintain the hospital during its first few years The head of the medical staff is Prof N Louros, who holds the chair of obstetrics at the University of Athens

A school for midwives, founded by Madame Schilizzi, the mother of Madame Venizelos, is attached to the hospital, and the matron is also superintendent of the school It accommodates 40 to 50 student midwives, and provides pleasant living quarters for the nursing staff of the hospital The students receive a three years' training, and on qualification they return to their homes in the provinces to spread the principles of hygiene among the people

NEW INVENTIONS

IMPROVED NEEDLE-HOLDER FOR PROSTATECTOMY

The widespread performance and success of Harris's operation for suprapubic removal of the prostate necessitates a periodic review and possible alteration of the armamentarium Two criticisms of the needle-holder appear to be justified In the first place, the fact that the shaft is straight causes the operator's hand to obscure the operative field and to make it difficult to place the catgut in the appointed slot, especially if the operation is complicated by an adipose abdominal wall or narrow pelvis The second difficulty is that the actual insertion of the needle may induce bleeding Harris states that "in order to avoid hæmorrhage from the needle puncture it is important that the needle should not have a terminal sharp cutting edge The needle should be sharpened only at the actual point It is made of rustless steel, and must be kept sharp" I do not consider that this precaution goes far enough The needle commonly supplied with the Harris needle holder is flattened from side to side, and although there is no cutting edge, a slit like opening is produced which may induce hæmorrhage when the needle is inserted



In an attempt to obviate these two difficulties I have designed a needle holder which has two main characteristics The shaft is angled about half way between the needle and the holder This permits a clear view of the needle both at the moment of insertion and immediately afterwards, by keeping the operator's hand out of the line of vision The angle involves the pilot being made with a series of joints similar to a chain so as to pass the bend Secondly, a round bodied needle is provided In order to eliminate the occasional annoyance of the catgut slipping out of the slot before being drawn through the tissues, a lateral slot that renders this accident impossible is provided with the round bodied needle

I have now used this needle holder in many cases and have found it very satisfactory The angled shaft permits a good view of the depth of the wound and the round bodied needle causes no additional hæmorrhage Finally, the needle appears to bite readily into relatively tough tissue

The needle holder was made for me by Messrs Down Bros, Ltd, 22A Cavendish-square, W 1, who also suggested the lateral suture holding slot

J Cosbie Ross, Ch M Liverp, F R C S Eng,
Honorary Assistant Surgeon to the Liverpool Royal Infirmary and Demonstrator of Operative Surgery in the University of Liverpool

REVIEWS AND NOTICES OF BOOKS

Methodik der Hormonforschung

Vol I By Dr Phil Christian Bomskov Leipzig: Georg Thieme 1937 Pp 716 RM.50

The first volume of this work deals with general laboratory methods and with the hormones of the thyroid parathyroid adrenal cortex and medulla and the pancreas. It is remarkable for the detail in which it describes all the working methods which may be used in the chemical and biological investigation of hormones and in particular of their assay Thus the subjects included in the 142 pages of the General Part range from a description of necessary surgical instruments and general operative methods to electrometric measurements of *p*H whilst the theoretical side is not forgotten and there are pages on the principles of biological assay and the mathematics of dose response curves, with a welcome emphasis on the necessity of basing all biological assays on comparison with standard preparations and international units In the Special Part the matter is arranged under the headings of surgical histological biological, pharmacological and chemical methods and the treatment is so full and inclusive that, whether the subject be the preparation of thyroglobulin or the assay of adrenal cortex extracts any method of repute is described in sufficient detail *for it to be carried out by a competent worker*

It is too often true of a work of this compilatory character that it is uncritical—in some respects it must be where the subject is controversial and the author must keep a judicial attitude while the case is still being argued—but here this conclusion would be unjust for the author has a sufficiently wide first hand knowledge to be able to indicate clearly and authoritatively the advantages and disadvantages of any method and its sphere of usefulness and limitations The author intends the book for chemists and physiological chemists for the medical man engaged in scientific work and for the clinician It does in fact combine chemical and biological information in just the way to be useful to all those laboratory workers in endocrinology who primarily trained in one or other science find themselves in this subject working on the frontiers between them For any type of worker whether purely scientific or technical it is a mine of information which can save the labour of many references to the original literature

A Synopsis of Hygiene

Fifth edition By W W Jameson M.A M D., F R.C.P D P H Professor of Public Health London University and Director of Public Health Division London School of Hygiene and Tropical Medicine and C S Parkinson D S O M R.C S D P H Lieut -Colonel R.A.M C (Ret) Assistant Director London School of Hygiene London: J and A Churchill Ltd 1936 Pp 623 21s

A fresh edition of this well known text-book was called for because of the mass of new public health legislation passed in the present year and the opportunity has been seized for revising much of the text and bringing the synopsis fully up to date in science as well as in law The title of this book aptly describes its purport and the positions held by the authors and their collaborators guarantee it as a sound exposition of British public health science practice and tradition The main appeal of the book is to students for the D P H course and to entrants to the various branches of public medical practice but experienced practitioners may refer to it for details which they are apt to forget It is designed to give under each section as much as every *medical officer of health is expected to know* and nothing in the non medical field which he need not know it does not profess to deal fully with the strictly medical duties of health officers. But it leaves no subject untouched and is a true and full synopsis of preventive medicine

Despite the condensation of the material the book is agreeable to read and it is remarkably free from errors Indeed we have noticed only one mis statement—namely Every five years the M O H must issue a survey report Survey reports are required only when the Ministry of Health calls for them the last call was in 1930 none was required for 1935 The index is good the references at the end of each paragraph are valuable This is a thoroughly sound *and useful book which should find a place in the* current library of every public health practitioner

Textbook of Pathology

Sixth edition By W G MacCallum Professor of Pathology and Bacteriology Johns Hopkins University Baltimore Philadelphia and London W B Saunders Co Ltd 1936 Pp 1277 42s

The fact that MacCallum s text book is enjoying its twentieth anniversary is sufficient proof of its continued usefulness and popularity Like its predecessors the present edition is arranged on an ætiological classification and not on the conventional system of organ headings The method has its advantages particularly in giving the student a better concept of disease as a process and in avoiding any tendency to turn morbid anatomy into a series of pots On the other hand it has the disadvantage that in the present state of our knowledge many diseases cannot be so classified and this makes the book less easy for quick reference the index is *however sufficiently* good for this disadvantage to be minimal

Although the general lay-out of the book is the same there have been numerous additions and alterations; in fact few of its 75 chapters have survived unchanged whilst several new ones have been added The additions have filled in the omissions we noted in the last edition and include newly described conditions such as healed pyelonephritis in children monocytic leukæmia von Gierk s disease and granulosa-cell tumour Naturally the size of the book has increased a little but with the 66 extra pages the reader gets 45 new illustrations The new edition can be confidently recommended for its up to-date information on all branches of pathology As a work of reference it should be no less useful.

Theory and Practice of Psychiatry

By William S Sadler M.D London: Henry Kimpton 1936 Pp 1231 42s

The author of this enormous book holds as he says in his preface that there is a dearth of practical literature dealing with the non psychotic groups of mental disorder and he attributes this dearth to a bias towards an institutional conception of psychiatry on the part of those who have written the accepted text-books His work is designed to make good the omission and is addressed not only to psychiatrists but to all physicians, sociologists, psychobiologists, and other trained men and women (clergymen, nurses, &c) who may be desirous of doing something, directly or indirectly, in the fields of preventive and curative psychiatry The work is divided into five parts The first deals with general principles and the second with personality problems these make up a third of the book The neuroses occupy the twenty-three chapters of Part 3, in Part 4 (134 pages) the psychoses are described, and the last part (244 pages) is devoted to psychotherapy

Numerous books have been written by psychotherapists for the same reasons as prompted Dr Sadler His own book is well intentioned, anything but abstruse, attractive for many people in its emphasis upon the value of religious and similar ideals, and its almost pastoral psychotherapy It is based on the long experience of its author as director of the Chicago Institute of Research and Diagnosis, a clinic for the treatment of paying patients, it is, moreover, fortified by references to books and articles dealing more authoritatively with some of the topics raised But the customary faults of such literature are here more than usually conspicuous It is diffuse, neither learned nor penetrating Commonplace reflections on the world and human nature are set down—either plain or translated into technical terms—as important psychological principles, while many of the crucial problems of morbid psychology are ignored Psychiatry as a whole is treated inadequately

Favourite Prescriptions

By Various Authors Edited by Sir HUMPHRY ROLLESTON, Bart, G C V O, K C B, F R C P, and ALAN A MONCRIEFF, M D, F R C.P London Eyre and Spottiswoode 1936 Pp 227 10s 6d

WHILST the older generation of physicians deplores the fact that the art of elegant prescribing is moribund, the younger replies that, when a specific remedy is known, there is no need to prescribe a blunderbuss The general practitioner, whose contact with the sick is more intimate than that of any physician, will probably think that the prescriber is more important than the prescription Whatever the truth, the compiler of a hospital pharmacopœia has to consider not only simplicity and elegance but also, and above all, economy This book contains 18 articles originally published in the *Practitioner* Each of the first 17 discusses the pharmacopœia of one of the great general or special hospitals and is written by a member of its staff The final article, by Dr L Lewis Lilley, gives an account of the National Health Formulary The reader, who should find herein much to interest and amuse him, may wonder if some of the old remedies which survive do so for any other reason than that they are sentimentally associated with the name of a famous figure in hospital medicine Incidentally he may wonder who "Uncle Henry" was, this being the name used affectionately by East End patients to connote the uncoated pil colocynth c̄ hyosc B.P Another point of interest among many is the fact that Guy's Hospital consumes some 2000 gallons yearly of liquid paraffin whereas St Mary's makes shift with a mere 330 gallons It may also be noted that most of the pharmacopœias now include some method of giving iron in massive doses in a compact form so that the patient is no longer compelled to swallow vast numbers of pills daily The prize for survival among remedies must surely be awarded to salicylic acid In the Regimen Sanitatis of the eleventh century it is stated that "willow bark treated with hot vinegar dissolves warts" In the form of collod. acid salicyl it is still prescribed for the same purpose in the National Formulary There is a foreword by the senior editor and an index is appended.

The L C C Pharmacopœia

Compiled by a Departmental Committee London P S King and Son, Ltd 1936 Pp 279 1s 6d

FROM a preface contributed by the medical officer of health we learn that this pharmacopœia is the work of a departmental committee composed of members of the L C C hospital and central medical staff, assisted by eminent authorities on modern medical and pharmaceutical practice A study of the book soon confirms the expert nature of the production Two hundred and seven pages are devoted solely to drugs and formulæ Short notes are given on all the medicinal drugs and preparations of the British Pharmacopœia and the more important ones of the British Pharmaceutical Codex Unlike most hospital pharmacopœias, the B P C preparations are here given preference to formulæ which differ only in detail from those more widely known. This is an excellent step in the right direction. Drugs and preparations subject to Schedule I and Dangerous Drug restrictions bear distinguishing marks, and this help might well have been extended to drugs in Schedule IV of the Poisons List and Rules. The increasing use of parenteral injections is recognised in the long list of ampoules Sterilised water for intravenous injections is prepared in accordance with the B P 1932 The Addendum has modified its preparation, and it is unfortunate that this and many other changes were not available to the compilers Prepared ergot, the best preparation now available, is prescribed in capsules of 5 grains, no mixture containing the liquid extract has been included—a step which will be approved by all obstetricians who still prefer ergot to the isolated alkaloids Somewhat surprising is the absence of any reference to ergometrine Special L C C formulæ are more numerous in the collection of mixtures The use of liquid extracts instead of large doses of the corresponding tinctures serves economy without loss of therapeutic activity A few parochialisms however find their place Why for instance is mist magnes sulph c̄ senna included as well as the mist sennæ co of the B P ? Ammonium bromide which has lost its official status occurs in two mixtures Mist cascaræ co might have been made more palatable by using the elixir in place of the liquid extract A syrup or an elixir of ammonium mandelate would have been a welcome addition. Pills have disappeared and a comprehensive list of tablets appears in their stead Antitoxins, sera, toxins, and vaccines are adequately represented, but there is no reference to staphylococcus antitoxin. The common proprietary arsenobenzene preparations are omitted Time honoured tables, such as dentition, incubation and quarantine, methods of administration of drugs, collection of pathological specimens, urine testing, and treatment of acute poisoning are well compiled

The preface claims that at the time of its publication this pharmacopœia was the most comprehensive and up to date of its kind, and expresses a hope that it may also be found useful by medical practitioners in general Both the claim and the hope are fully justified, any practitioner would find the book a mine of useful information

THE LANCET

LONDON: SATURDAY JANUARY 16 1937

DRUG COMPOUNDING IN HOSPITALS

THE hospital population under the jurisdiction of the London County Council is a very large one since that body now controls the institutions which until six years ago were administered by twenty-six separate authorities Just as one of the objects of the amalgamation of industrial concerns otherwise known as rationalisation is economy so it should be possible to effect a saving in the cost of administration when so many hospitals are brought under the control of a central authority It may be assumed that the L C C in embarking upon the compilation and publication of a common pharmacopœia for all the institutions which it administers was actuated by the dual motives of securing uniformity of practice and economy in the drug bill and a careful examination of the book (reviewed on p 152) suggests that in the endeavour to keep the costs of the pharmaceutical departments within bounds there has been a careful avoidance of any attempt to be economical at the expense of efficiency Nor is there any desire on the part of the central authority that medical officers should be restricted to the formulas which appear in the new book thus it is expressly stated in the preface that there is no intention to interfere with the freedom of the medical staff to prescribe what they consider necessary or desirable

A question which naturally occurs to the mind is whether the publication of a pharmacopœia for the use of all the hospitals under the juris diction of the L C C may be taken as a token that at some future time a central manufacturing laboratory may be established for the purpose of supplying all the units not only with approved formulas but also with compounded drugs As is commonly known a central buying department for the L.C C. institutions has been in existence for some time and it may be that the idea or the practicability of an extension of the principle of central buying to central production is in the minds of some members of the council. It may be recalled that a scheme for a coöperative arrangement between the London voluntary hospitals was advocated some years ago for some reason however it did not reach the stage of activity which its promoters had desired But whatever the future plans of the L C C may be the publication of their pharmacopœia is a commendable under taking It is a practical book containing abundant evidence of having been prepared by practical men and being the latest hospital pharmacopœia it should give valuable hints to those whose duty it is from time to time to revise other pharma copœias Excellent material for such a revision is provided in the annotated collection of hospital pharmacopœias just issued under the hand of Sir HUMPHRY ROLLESTON and Dr MONCRIEFF (see p 152) Very wisely the compilers of the L.C C volume have employed the British Pharma copœia and the British Pharmaceutical Codex as a basis for their work. Unfortunately the book was in the press when the Addendum 1936 was published so that no recourse was possible to the formulas and amended monographs in it that however is a matter which can and indeed should, be corrected by a short supplement

The recognition in these volumes of the vital importance of drug compounding makes it all the more desirable to bring the nomenclature of the pharmaceutical branch of hospital practice into conformity with modern usage the dispensary in future should be known as the pharmaceutical department and the dispensing chemist as the pharmacist At last week s meeting of the council of the Pharmaceutical Society it was officially stated that the Post Office had on representation being made to it agreed to discontinue the use of the term dispenser or dispensing chemist for certain appointments and to substitute the description pharmacist At the same meeting the secretary of the Society was instructed to com municate with the British Hospitals Association in respect of the voluntary hospitals and with the Ministry of Health in respect of institutions under the control of local authorities with a view to the adoption of the same policy Pharmacist ' is a statutory title and there seems to be no reason why it should not be uniformly employed

SURVIVAL AFTER RADIUM

IN their seventh annual report published this week the National Radium Trust and Radium Commission include an analysis of results obtained at their associated hospitals in the treatment of cancer at certain sites The first fact to be noted about the figures is that the proportion of patients who die from unknown causes is rapidly falling and few are nowadays lost sight of—only 3 0 per cent of those who came for treatment in the years 1930 32 As Dr BRADFORD HILL points out in his article this week on medical statistics completeness of this kind is vitally necessary for accurate assessment of the results of any form of treatment and it is encouraging to note the importance here attached to the energetic work of the follow up departments The period covered by the report is 1930–32 and the records of 5840 patients are analysed The sites studied are five (breast cervix lip tongue and floor of the mouth) and the customary test of success is applied—namely the survival rate or as it is here termed the net survival rate defined as

> the proportion of patients who are alive irrespec tive of the presence or absence of active disease to the total number of patients treated, including those who have died of operation but deducting from the total number patients dead from other causes than cancer and patients lost sight of

In addition a new measure has been introduced termed the symptom free rate and denoting the proportion of patients who have remained free from symptoms for a given period after the begin ning of treatment The argument in favour of this rate is that it may enable the success or failure of a method to be judged sooner than can be done when the survival rate is used For instance, with experience it might be possible from the trend of the symptom free rate in the three-year period to estimate the survival rate at the end of five years At present the volume of material does not suffice for such a purpose, nor indeed to show whether the two rates are in fact more highly correlated than the two survival rates at the same points of time

In reviewing so detailed an inquiry we can attempt only brief and selective reference to the results It appears that 70 per cent of the women with carcinoma of the breast who presented themselves for treatment in Stage I of the disease survived three years, and 50 per cent five years Of those in Stage III, on the other hand, only 18 8 and 13 6 per cent were alive, many of these being given only palliative treatment The 2058 patients with carcinoma of the cervix were divided into four stages of those in the earliest group 61 1 per cent survived three years and 49 4 per cent five years, whereas of those in the latest group only 12 6 per cent were alive after three years and 7 2 per cent after five Figures for carcinoma of the lip show, as might be expected, the great importance of involvement of the glands Of those in whom the growth was limited to the lip slightly more than three quarters lived five years , of those with the regional lymph glands affected less than a third survived as long Whatever the stage of disease, the outlook with carcinoma of the tongue is depressing, for of the patients most favourably placed only a quarter are alive at the end of five years, while out of 30 advanced cases only 1 remained The floor of the mouth gives less unsatisfactory results than this—at least when the glands are not involved —for rather more than half the patients lived five years With each of these sites, as has been shown over and over again, the chances of survival are better, often much better, if local spread or metastasis has not taken place Yet the report shows that the proportion of patients in whom the disease is still localised to its original site when application for treatment is made, amounts, for all the sites investigated, to only 25 per cent This figure varied but little between 1930 and 1932, although there was reason to think that the proportion coming for radium treatment at an early stage was increasing slowly among those with carcinoma of the lip, tongue, and cervix uteri Younger patients with the latter or with carcinoma of the breast to some extent tend to seek treatment at an earlier stage then those who are older The question of age is also studied in relation to survival, in two groups, under and over fifty years For carcinoma of the breast there is no significant difference though the figures suggest a slightly more favourable issue in Stages I and II with the older patients For the cervix this difference is definite and gives statistical support to the belief held by many clinicians that the prognosis is rather worse in young patients For the remaining sites the data are insufficient for investigation of any relationship between age and survival For these, too, any study of the relative success of different methods of treatment has had to be postponed till more material has accumulated, though those that prevail have been tabulated One very serious obstacle to such a study is the large number of different combinations of methods of treatment For instance 86 such combinations were distinguished in treatment for carcinoma of the breast, 66 for the cervix, 56 for the lip, 110 for the tongue, and 53 for the floor of the mouth Some attempts to cope with this problem have been made for the breast and the cervix Patients with carcinoma of the breast in Stages II and III show a slightly better three year survival rate and a higher symptom free rate when treated by interstitial irradiation combined with excision than when treated with interstitial irradiation alone, but with the smaller number of patients observed for five years there seems to be no clear advantage of one treatment over the other For carcinoma of the cervix there is a suggestion that the use of X rays combined with the Stockholm method of treatment gives a greater freedom from recurrence than the Stockholm method alone , but the survival rates at three years under the two methods show no material difference

In judging these various and numerous survival rates it must be remembered, as the report emphasises, that they give a picture of the average results of radium treatment at a very widely scattered group of hospitals, and " must not be compared lightly either with the results of special clinics, or with results based upon a picked series of cases treated by a highly skilled surgeon On the contrary, the results may be said to be those achieved by the medical skill of a large part of the country working with radium, in conjunction with other methods, upon the average cancer patient seeking treatment " The statistical treatment of the data and their presentation have, we may add, been carried out with obvious care and skill

CARBON MONOXIDE POISONING

So long as coal gas is used for heat and illumination, carbon monoxide poisoning will be of great interest and importance Dr Harvey G Beck[1] of Baltimore says that in New York only highway accidents exceed it as a cause of death We are familiar now with the way in which carbon monoxide, with its high affinity for hæmoglobin, displaces oxygen from the blood and produces a fatal anoxæmia without the usual symptoms of asphyxia Symptoms may be absent altogether, or present only as a kind of mental confusion, according to the concentration of the gas and activity of the victim This feature is at once the attraction to suicides and the trap to the accidentally exposed The struggle for air and extreme distress that we associate with suffocation are due to accumulation of carbon dioxide in the alveoli of the lungs, and there is no such accumulation in carbon monoxide poisoning Indeed the hyperpnœa that may accompany this—though almost ineffective and perhaps unnoticed at the time—actually lowers the carbon dioxide content of the blood, leading to a state of affairs which many believe to militate against recovery Administration of carbon dioxide in treatment is therefore desirable for this reason as well as for the more important reason that it stimulates the respiratory centre thereby causing deep breathing That the deep breathing so caused may be as completely effective as possible oxygen should also be given. Dr C K. **Drinker** of Boston strongly advocates and points out the advantages of a mixture of 7 per cent carbon dioxide and 93 per cent oxygen. His article is one of the clearest summaries of the physiological and therapeutic aspects of carbon monoxide poisoning that we have seen and is well worth reading

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[1] *J Amer med Ass* Sept. 26th 1936 p 1025

Chronic carbon monoxide poisoning is a recurring subject of controversy largely as the recent advisory committee of the Royal College of Physicians of London on domestic heating by gas suggest,[3] because of confusion in terminology **Drinker** points out that acute poisoning followed by recovery may leave residual lesions The body has been deprived of oxygen and some parts of it notably the nervous system may have suffered irreparable damage He states and produces evidence that this is rarer than one would expect Acute poisoning is usually followed either by death or complete recovery but some cases do show sequelæ. This however is not chronic carbon monoxide poisoning By chronic is meant the result of continual exposure to concentrations of the gas insufficient to produce acute poisoning and chronic poisoning in this sense is the entity which is denied existence by some but in which others believe The advisory committee of the Royal College of Physicians to which we have just referred hold that the available evidence is unconvincing as to the occurrence of any definite group of symptoms which would indicate a chronic form of carbon monoxide poisoning **Beck** says The results establish the fact that slow carbon monoxide asphyxiation (anoxæmia) produces a definite clinicopathologic entity despite views held to the contrary At first sight these two statements appear irreconcilable but a perusal of **Beck** s paper leaves us with the impression that his patients whose intermittent exposure ranged from several months to eighteen years might have been suffering from repeated attacks of slight acute poisoning Common sense at least suggests that such a sequence of attacks might well have permanent results and that the possibility of their occurrence (e g in industry) should be minimised Such an entity if established would probably be known as chronic carbon monoxide poisoning in spite of definitions excluding it from that title

Chronic poisoning in the sense in which we have defined it as something gradually appearing in the complete absence of any signs of acute poisoning probably does not exist This point is not as may at first appear merely academic Dr J S **Owens**[4] for instance in the course of a paper on carbon monoxide poisoning from motor-car fumes mentioned in 1933 the possibility that low concentrations of CO may be injurious when breathed for long periods while M. **Loeper**[5] and his colleagues in Paris have just published a paper on occupational CO poisoning in which they attribute various quite severe symptoms to minute but abnormal blood CO values only measurable by a certain chemical method more delicate than spectroscopy In this group of patients long exposure to small concentrations of CO was established The argument convincing at first is not helped by the paper immediately following in which they describe l oxycarbonémie endogène This deals with a group of patients with various clinical syndromes in which similar concentrations of CO in the blood are attributed to the effects of the malady itself and not to exposure to CO Fortunately it is now generally admitted that carbon monoxide is chemically non toxic and can be injurious only in so far as it produces anoxæmia There is no evidence that exposure which does not result in anoxæmia has the slightest effect and even **Beck** s contention that repeated anoxæmia is injurious is by no means generally accepted Dr **Esther Killick** s recent work[6] is also reassuring for it shows that the body on repeated exposure to carbon monoxide develops a resistance to it so that the blood takes up less and less on successive occasions Though it may be an insidious enemy carbon monoxide has no hidden resources and can be fought very successfully if we make full use of our ordinary weapons

Dr A. Hugh Thompson consulting surgeon to the Western Ophthalmic Hospital and a valued contributor to **The Lancet** died on Jan 11th at his home in Ellerdale road, Hampstead in his 78th year

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J Industr Hyg November 1936 p 537

See Lancet 1936, 2 1531.

Ibid 1933 1 151

[5] *Bull Soc méd Hôp Paris* Dec 21st 1936 pp 1671 and 1676

See *Lancet* 1936 2 143

The Dublin Fever Hospital.—On Jan 1st the new constitution of Cork-street Fever Hospital became effective and the institution will in future be known as the Dublin Fever Hospital. Hitherto the hospital which has been in existence for more than a hundred years has been a voluntary institution controlled by a board of voluntary governors It was founded originally mainly by members of the Society of Friends, and there has always been a strong element of that philanthropic society interested in its management the same family names recur again and again in the roll of governors From the beginning of this year the voluntary character of the institution disappears and the hospital becomes a public one the cost of maintenance being a joint charge on the corporation of Dublin and on the Dublin board of assistance The control will be in the hands of representatives of these two bodies and of the existing board of governors of the hospital, who are constituted a perpetual college of electors for the election of such representatives The medical officers of health for the city and the county of Dublin will have certain advisory duties in regard to the hospital The present site is not sufficient for the enlargement required and it is understood that search is being made for a [illegible] and convenient site

ANNOTATIONS

HOSPITAL UNITY AT OXFORD

OXFORD will soon have lost the remains of her reputation as a home of lost causes A pioneer in the hospital contributory scheme 17 years ago, she has now started a plan for the better coördinating of hospital services comparable to the one in operation at Manchester[1] The Oxford and District Joint Hospitals Board, upon which the University, local public health authorities, and medical organisations are all represented, has been formed under Lord Nuffield as president The primary function of the Board will be to make and keep continuous touch between the various hospitals in the area, the representatives of which will thus be able to confer often upon questions of local hospital service One immediate and valuable effect of such liaison might be that cases which could not be admitted to one hospital, because all its beds were full, might be admitted without undue waste of time and money to another hospital not far away The Board further suggests that appeals for contributions, at present circulated by each hospital separately, should be coördinated, thus saving expense and avoiding overlapping Provided that subscribers may earmark their subscriptions for a particular hospital if they so wish, the Board thinks that such coördination would lead to an increase rather than a decrease of contributions Though it must be clearly understood that the Board will in no wise attempt to tamper with the actual administration of any of the hospitals, all of which will retain their identity and independence, it is hoped that, through their representatives on the Board, the hospitals will jointly consider schemes for hospital extension or the building of new hospitals suitable for the needs of the whole area Further matters that might in the future be considered by the Board are the supplementing of present ambulance services and the provision of further facilities for convalescent treatment More immediately, the Board has decided to coöperate in raising funds for the Banbury Hospital rebuilding scheme Whether or no the voluntary hospital system itself is to be looked upon as a lost cause, it still has many staunch friends, and the best way in which they can help it to survive is to make it coöperate rather than conflict with municipal services The Oxford and District Joint Hospitals Board is a step in the right direction and it seems likely that this attempt to secure local hospital unity will not long be confined to Manchester and Oxford

MASKS AND FACES

WHEN our daily colleague grows a beard or our wife bobs her hair it is bound to be disturbing for a while to our companionship There is no question as to whether the new style is better or worse than the old, what upsets us is the fact of alteration, for nothing distracts us from the realities of life so much as chops and changes in its superficialities Regular meals, a permanent Bradshaw, our own bed and old companions make for a free spirit which can go more easily and on better excursions if there is no disturbance in its temporal surroundings, the real artist of the spirit is generally a steady family man of pretty fixed habits who cannot waste his capacity for adventure on wearing strange clothes and living a curious life So there is bound to be some emotional upset when one of the great English weeklies dresses up in new clothes, with as it happens a little lipstick thrown in No one, except perhaps the printer, has thought of the *British Medical Journal* as a delicious example of typography, nor fondled its leaves with the affection of a bibliophile We have known it and loved it as a faithful source of information and inspiration, we wanted to listen to its talk, and never thought whether the familiar face we liked so well was handsome or ugly The *Practitioner* and the *Medical Press and Circular* have also had a new outfit for Coronation year, and *Nature* not long since reformed its appearance To readers and to writers it is all rather upsetting But they are not the only people who are in fact concerned The artistry of legible type and the technique of printing have devotees who are equally anxious for progress, and have equivalent progress to exploit, and if the new form is easier to read by so much will it make it easier for the reader to suck up advantage And it will not be long before the new form becomes the familiar face It reminds us of the kindly lady who looking at the memorial plaque of her husband which was just a fiasco said, "Oh, well, of course it isn't a bit like him but people will soon believe that he was like it, so its all right" And so in the end we should be equally disturbed if the beard came off or the hair went back to a bun

A SURGICAL ATTACK ON PSYCHOSES

THERE is at present no sign that timidity or conservatism is holding up any advance in the treatment of mental disorder Prof Moniz, well known for his valuable and audacious work on cerebral angiography, shows himself equally bold in attacking the problems of psychiatry He decided, on theoretical grounds, to see what would be the effect of destroying tissues of the prefrontal region in each cerebral hemisphere of insane patients His theoretical grounds, as presented here in detail, seem crudely neurological, naive, and faulty from the psychiatrist's point of view, but that is not an important objection if the procedure so based leads to striking benefit Prof Moniz modestly puts forward the opinion, shared by his distinguished Lisbon colleagues that striking benefit has in fact followed the operation in most of the twenty cases so far treated He gives full details of these cases—in which excitement and anxiety were the prominent clinical features—to enable the reader to form an independent opinion It is evident that in some of his patients the mental disorder cleared up surprisingly soon after operation and there is no reason to dispute his provisional figures—viz seven patients recovered, seven considerably improved, and six unchanged (of whom five were schizophrenics)[1] Ten of the twenty patients were treated by injections of alcohol into the centrum ovale ten by gouging out the tissue with a specially devised leucotome Prof Moniz, in his excellent account of what he did and what happened afterwards, proves his point that the operation has not had fatal or disconcerting effects, but he scarcely convinces the reader that it does more good than less heroic forms of treatment might He is however so cautious, and even deprecating, in his gentle yet persuasive claims that others are sure to try the method and, if they follow his recommendaion to reserve it for prolonged depressive attacks uicidal conditions and severe anxiety they are also ure to obtain many recoveries which will not be ecisive as to its value In the meanwhile the mono raph adds a curious chapter to the history of sychiatric treatment and yields valuable information n what human beings can stand (e g in some nstances the alcohol was squirted in while the patient ras conscious) and on the general, neurological, and sychical effects of this trauma in the frontal lobes f the brain

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[1] *Lancet* 1936 2 1403

[1] Tentatives opératoires dans le traitement de certaines psychoses By Prof. Egas Moniz *Paris* Masson et Cie 1936 Pp 374 Fr 40

DUPUYTREN'S CONTRACTURE

Fourstein[1] suffered from Dupuytren's contracture n the ring finger of his left hand which was bent t 20 Having little confidence in surgical measures o decided to treat himself with radium—though he ould find little to encourage him in what had been ritten on the subject He divided the Y-shaped hickening of the palm into two fields one longitudinal the other transverse and to each field applied 0 mg radium filtered with brass gutta percha and auze for 48 minutes (40 mg hours) Eighteen days ater he gave a half-dose and in a further month epeated the full dose The result delighted him ain disappeared full extension of the finger became ossible and the fibrous mass diminished. Some ears later he observed the same condition beginning n the right hand in the form of a tender round subcutaneous mass the size of a pea He applied the ame treatment with equal success After a similar xperience with eight other cases he concludes that adium treatment is the method of choice for early ases though it does not give a perfect cosmetic esult Severe cases he thinks should be treated by urgery followed by radium to prevent the formation f cheloid

STAINING OF THE RETINA IN LIFE

The retina is translucent and the ophthalmoscope eveals only such lesions in it as are opaque to light. Examination by red free light is the one substantial dvance that has been made in revealing more than he ordinary ophthalmoscopic methods allow but arge groups of retinal affections such as the extensive degeneration following optic atrophy still remain invisible The possibility of revealing these by vital staining was suggested in a paper read on Jan 8th at the ophthalmological section of the Royal Society of Medicine by Mr Arnold Sorsby Dr A Elkeles Dr G W Goodhart and Dr I B Morris The difficulties in such a procedure are essentially two a dye has to be used that will pass the blood brain barrier and the dye has to be non toxic Since the experiments of Goldmann in 1913 it has been held that vital dyes do not stain the brain; in fact the clear enunciation of the blood brain barrier theory was largely due to the failure of Goldmann and subsequent observers to get such staining Ophthalmologists—e g Schnaudigel and Rados—brought forward additional evidence to this effect by their failure to stain the retina That the barrier was not as complete as these earlier observers thought has become apparent from the work of Lina Stern and her collaborators and it is now known that basic dyes do get through the barrier and stain the grey matter of the brain Recent work by Fisher on the iris and ciliary body and of Kuboki on the vessels of the choroid have added to the possibilities of vital staining in the intact animal Working on the rabbit with basic dyes Sorsby and his collaborators were able to obtain only transient staining in normal retinæ but the staining was of many hours duration if the retina was first damaged by chemical or mechanical means They demonstrated to the society a series of rabbits in which they had produced pigmentary degeneration of the retina by the intravenous injection of Septojod an iodine preparation and also a rabbit with thermal injury to one retina Such rabbits showed staining of the fundus when subjected to intravenous or intramuscular injection of light green and other dyes the depth of staining bearing a direct relationship to the degree of injury The mechanism appears to be that the normal retina can oxidise the dye to a colourless leuco base while the damaged retina has lost most of this ability Should it prove possible to apply these results clinically there seems a prospect that the pathological retina may be rendered visible No less important would be the emergence of what promises to be a method for the study of retinal metabolism

THE MOVEMENT FOR BIRTH CONTROL

The annual report of the National Birth Control Association for the year 1936–37 has reached us and provides evidence that its work has been progressive in many directions The two primary objects of the Association are (1) the provision by local authorities of advice for women whose health makes pregnancy medically undesirable; and (2) the provision of voluntary clinics for women whose circumstances are such that both public policy and their individual good demand family limitation In both cases those who oppose the spread of contraception point to a falling birth rate and to them the introduction to the report supplies a considered reply The words of Lord Dawson in the House of Lords are quoted when he said It is a fact that the smaller families of to-day have a higher proportion of fitter children and the mothers of those children are as well as and in my judgment better than those of any previous generation Similar support of the movement has been advanced by Lord Horder who has publicly stated that a sane population policy must include planned families

It seems to be generally recognised that the population of Great Britain will shortly become stationary before declining and the report of the Association holds that this is exactly the place where birth control clinics would play an important part by making parenthood easier and by reducing the mortality rates of infants and mothers That these arguments are prevailing is shown by the increasing number of medical men who support the Association and by the statement that during the year under consideration 18 new clinics have been established while 23 more maternity and child welfare authorities have decided to refer cases either to clinics whose number is increasing or to doctors in private practice Good practical work has been done by the Birth Control Investigation Committee of the Association the activities of which have been supported by grants from the Eugenics Society Under this committee Dr J R Baker working in the department of pathology Oxford University has continued his researches into the spermicidal substances which were reported in his recent book The Chemical Control of Conception[2] Dr S Zuckerman working in the department of human anatomy, Oxford University has been engaged upon a general inquiry into the factors concerned with the period of fertility in primates Among other things, he has been concerned in investigating the time of ovulation in primates, the variability of the phases of the menstrual cycle the cyclical excretion of the sex hormones, and the physiology of sexual skin swelling He has further been able to conduct a limited number of controlled matings with a view to ascertaining the limitations of the period of fertility occurring within the cycle

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[1] Feurstein J G (1936) Wien klin Wschr 49 109

[2] Lancet 1936 1 161

A satisfactory financial position was reached during the year owing, apparently, to the success of a gala ballet performance the receipts from which transformed a probable deficit into a credit balance But with the development of the work for the coming year, larger support will be required, while there is proof that when a clinic is opened special donations are received , this means that if money is spent money is forthcoming All who read the report will learn how and why further financial support is necessary, and the work recorded in the report of the Association justifies the plea for substantial assistance

FATALITIES ATTRIBUTED TO NITROUS OXIDE

"LAUGHING GAS" has so long been regarded as an anæsthetic—perhaps the only one—which has no poisonous properties that attention is at once attracted by the record of fatalities attributed to its direct action It is true that plenty of deaths have followed the use of the gas , but this is bound to happen when an anæsthetic is often chosen, because it is innocuous, for patients who are gravely ill or are to undergo some especially trying operation Deaths in these circumstances have been explicable without assuming any toxic effect from the anæsthetic itself Some cardiac dilatation has indeed been put down to nitrous oxide, and the late Dudley Buxton believed it sometimes responsible for this complication The fatalities, however, now recorded[1] are in quite a different category, for in two of the three cases the operations were trivial There appears to be here no question either of asphyxia—which is of course easily caused by improper giving of nitrous oxide—or of death from surgical shock In none of the cases did post-mortem examination reveal to the naked eye any cause of death, and it was on the histological existence of damage to the cortex of the brain that the verdict is based of "death from destruction of cerebral cortex following nitrous oxide and oxygen anæsthesia" Details of the damage are given it was mainly in the deeper layers of the cortical cells , the neurones of all layers below the top were somewhat affected those of the lowest layers being wholly destroyed The parenchyma of the basal ganglia also showed severe degenerative changes, but the cells were only slightly reduced in number A fourth patient of whom a record is given recovered, although not completely after eight months of various pareses

These records are unusual and alarming Moreover, there is this difficulty in understanding the sequence of events as represented—that if the deaths and the early symptoms were due to the cerebral damage this must have started with rapidity early in the inhalation That creates a new conception of the possible effects of nitrous oxide, and will not probably be accepted forthwith solely on the histological evidence *from* patients all of whom died *many* hours after the inhalation had ceased The symptoms in two of the cases started about twenty minutes after the beginning of the inhalation, with spasm and jerking of limbs and stoppage of breathing. This was started again artificially but neither recovered consciousness, and they died 60 and 74 hours from the start, after incontinence and abolished reflexes had been noted The fourth patient, who recovered, was the only one of the series whose operation was a long one He was under the anæsthetic for an hour and a half, and the symptoms began an hour later

CHILDREN IN WINTER

WRITING on the care of children in winter, Dr Alan Moncrieff[1] recommends that they should go out daily, in any weather except fog between 11 A.M. and 1 P M to make the most of the sun Children of four and under should go to bed at 6 P M , half an hour's grace for each year of age being allowed to older children, with 8 P M as the limit for all children under thirteen The rest period, unless it can be taken in the open air, should not clash with the outing period Fresh air is essential by day and night and rooms must not be overheated, dry, or dusty By night, small restless children should wear a jersey or pullover , for the daytime Moncrieff suggests a woollen vest next the skin and woollen socks, a woollen jersey, or frock with woollen knickers for girls, and trousers for boys Bare knees are desirable indoors, but woollen pullovers to cover the whole of the legs should be worn out of doors by young children He does not object to gloves for those who feel the cold in their hands, and the most important point about footgear, he thinks, is that the soles should be waterproof Wet clothes especially wet shoes, should be changed at once and dry slippers should be kept for use at school There is much to be said for wind-resisting garments , but hats, unless the child has grown accustomed to wearing them, are unnecessary A little extra food to compensate for heat loss is needed in winter Extra fat in the form of butter—preferably butter produced in those parts of the world where the sun shines in winter—is excellent and its effect in producing acidosis has, he thinks, been exaggerated A bowl of porridge, or other cereal, enriched by cream, butter, or vitaminised margarine, makes a sound breakfast for children in winter Green vegetables, salads, fruit liver, fish, and fish-roes are all good, and extra milk, provided that it is "safe," should only be withheld from children with poor appetites With a diet generously planned on these lines added vitamins are unnecessary Ten per cent of colds are "home grown" and are amenable to treatment of ear, nose and throat surgical or otherwise The remaining 90 per cent are caught from another sufferer In Moncrieff's opinion vaccines and ultra violet radiation are useless against colds and attempts must be made to increase the child's resistance by sound feeding and avoidance of fatigue or chilling Cold baths or cold sponging all the year round may have a hardening effect Diphtheria, measles, scarlet fever, and whooping cough are all more prevalent in winter All children should be protected against diphtheria by injection in the second or third year of life Mild attacks of measles can be assured by the use of convalescent serum and scarlet fever responds well to serum treatment Whooping cough is now probably the greatest problem, though vaccine prophylaxis may yet prove a success Rickets persists as a characteristically winter ailment because cod liver oil is given in too small doses. Emulsions are dilute containing at best only 50 per cent of cod liver oil, while cod liver oil and malt may contain only 10 per cent. A child a month old requires a few drops daily of pure cod liver oil; at six months a teaspoonful daily is necessary and at a year one and a half or two teaspoonfuls. The maximum dose is required in winter and only slightly less should be given in summer if rickets is to be prevented or cured.

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[1] Lowenberg K Waggoner R and Zbinden T *Ann Surg* November 1936 p 801

[1] *J State Med* January 1937 p 50

MYOPIA IN CHILDHOOD

THE comparative importance of heredity and environment in the genesis of myopia still gives rise to argument. The evidence published in 1867 by Hermann Cohn of Breslau made it seem that faulty environment is the usual cause of myopia in school-children and his influence did much to improve the conditions they worked under. Of late years the movement back to heredity has gained many adherents, including Steiger who based his conclusions on a study of 50 000 eyes. The latest contribution to the discussion comes from Stockholm where Dr Gunnar Nordgren[1] rivals his two predecessors in the wealth of his material. Since 1894 the Swedish school authorities have kept records of the incidence of myopia and though only 14 000 children were examined in 1895 their numbers have risen considerably being 27 000 in 1918. The first and perhaps the most striking observation that Nordgren discusses is the decline of myopia by about a third between 1894 and 1920. It may well have been a more than accidental coincidence he thinks, that far reaching reforms in school hygiene were introduced during this period. Between 1920 and 1935 however there was little reduction. In analysing the possible causes no significant relationships could be established between the frequency of myopia on the one hand and geographical factors including life in town and country on the other. Nor did myopia appear to be associated with poor physique. On the positive side was a possibly significant relationship between myopia and the general sickness rate but Nordgren hesitates—and indeed never completely recovers from his hesitation—over the inwardness of this association. His cautious verdict is that there can hardly be any doubt that both predisposition and external circumstances play a part in the origin of myopia but we have still to ask how great is the average frequency of myopia which can be traced to external factors. But later he adds: one can however probably by an unimpeachable general hygiene both in school and home limit the extent of myopia to this irreducible minimum. This agrees with our own modest conclusion a year ago[2] that with our present knowledge (or ignorance) it would be unwise to tamper with the principle on which most young myopes are now treated or to discourage efforts to secure special care for myopic children.

MERCURIAL ANTISEPTICS

WITH the title of The mechanism of inactivation of mercurial antiseptics by serum and its implications regarding the possibility of intravenous antisepsis" Smith Czarnetzky and Mudd[3] have published an excellent study of which our only criticism is that it seems somewhat belated. Their method was to determine the proportion of surviving bacteria at a series of time intervals in mixtures of diluted culture with solutions of mercuric chloride mercurochrome merthiolate and a compound said to be identical with Metaphen with and without the addition of 80 per cent of normal horse serum. In the presence of serum the concentration of mercuric chloride had to be multiplied by 300 to obtain the bactericidal effect exerted in its absence that of metaphen 400 times of mercurochrome—which was in any case by far the weakest germicide of the four—800 times and of merthiolate 14 000 times. These differences are of course due to the combination of mercury with serum protein and it is deduced from comparison of different curves of survival rates that this combination takes place faster than the reaction with bacteria which is responsible for germicidal effect. Further purely chemical experiments were undertaken to determine how much of these compounds will combine with a given quantity of serum protein and for each of them it was found that this amount was approximately 0 35 gramme as mercury per litre of serum. It was further shown that this mercury protein combination has itself scarcely a trace of bactericidal activity. No experiments are recorded in which whole blood was used in place of serum. It has been the experience of others that in this medium mercury compounds are incapacitated even further. The conclusion that these substances are unsuitable for intravenous antisepsis is therefore a very moderate one and it has been reached before by other means though perhaps not by so devastating and complete an exposure of the underlying fallacy. This might appear to be beating a dead horse but for the fact that misguided enthusiasm and ill chosen technique have led to fantastic claims being made on behalf of some of these mercury compounds within quite recent times. The authors are careful to say that their conclusions have no bearing on types of use other than intravenous injection the possible merits of mercury compounds for superficial disinfection are quite another problem.

POSITIVE AND NEGATIVE

THE ordinary man—and some say that doctors are the most ordinary of men—usually finds it hard to appreciate that the active disease he is observing is not caused by some equally active and positive noxious influence. The discoveries of the early bacteriologists undoubtedly supported this attitude of mind in that they were so often able to produce (on demand) microbes, toxins and what not out of their conjurors flasks. The conception of some negative factor as a cause of disease took a long time to be established and even now it is not always easy to revise our ideas of pathology to keep pace with the discoveries in the field of vitamin research. It is annoying to be told for instance that alcoholic polyneuritis has nothing to do with alcohol but is the result of a vitamin B deficiency. Yet this appears to be so. At all events Dr M B Strauss in the Harvard tercentenary symposium on nutrition[1] stated that patients could be cured of their neuritis by changing their diets but without restricting their whisky. It was suggested also that the so-called toxic polyneuritis of pregnancy can be cured by administering vitamin B as C W Theobald has maintained in our own columns[2] which would make it improbable that even this polyneuritis really

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[1] Nord med Tidskr Dec 19th 1936 i 969

[2] Lancet 1935 2 1418

[3] Smith D T Czarnetzky E J and Mudd S, Amer J med Sci December 1936 i 79

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[1] New Eng J Med Dec 17th 1936

[2] Lancet 1936 1 834

toxic in origin Strauss's contribution was but one of a series, almost all of which emphasise some relationship between disease and defective nutrition The symposium as a whole is a mixed bag, but it illustrates very well the trend of current thought "Deficiency" has quite displaced "toxins" in the minds of the investigators, and this is an excellent thing, for hypothetical toxins were a sterilising conception and have never provided us with a satisfactory basis for treatment, whereas proved deficiencies offer great therapeutic possibilities

HOSPITALS AND THE UNIVERSITY GRANTS COMMITTEE

THE work of the University Grants Committee provided the subject for a meeting of the University and Research Section of the Library Association on Saturday last Mr R Offor, Ph D, librarian of Leeds University, who opened the discussion, and other speakers were unanimous in their testimony to the freedom from red tape in the Committee's work They all agreed about the value of the quinquennial visits of the Committee to discuss on the spot with representatives of the universities their problems and needs It is for these reasons that friends of voluntary hospitals have looked to an extension of the powers of the Committee in the direction of giving financial assistance to the actual work of the hospitals Something of the kind seems to have been in the mind of the Scottish public health services committee in proposing a "teaching faculties grant" With the extension of opportunities for medical education in the council hospitals such a grant could however hardly be confined to voluntary hospitals, and in England it could not extend to the many voluntary hospitals which have no connexion with a medical school It must too be remembered that the University Grants Committee is concerned with the medical school rather as a part of the university than as an adjunct to a hospital Hence we think it very doubtful that the University Grants Committee will consider it within the scope of its duties to come to the financial support of voluntary hospitals None the less, those hospitals will join with the Library Association in their tribute to the Committee

HENRY TONKS

Prof Henry Tonks, who died at his house in Chelsea on Friday last, Jan 8th, was rightly famous as artist and teacher, and his first impulses in those directions were received while he was a medical man, and attached to the medical school at the London Hospital He gained the diploma of F R C S Eng in 1888, and was for a time assistant demonstrator of anatomy in the medical school of "the London" while he held house appointments at the hospital and at the Royal Free Hospital where he was for a time senior resident medical officer His first direct step from one profession to another was taken when he became lecturer on artistic anatomy at the Westminster School of Art and Prof Brown, when he moved from the Westminster to the Slade School invited Tonks to become his assistant From this time forward Tonks gave up the pursuit of medicine and devoted himself entirely to painting and its teaching In 1917 he was elected Slade professor of fine art in the University of London in succession to Prof Brown, a position which he held for thirteen years to the great advantage of those with the pursuit of their studies at heart, and to the discomfiture of any who thought either that drawing was easy or that accomplishment could be achieved in accordance with some set of precepts He was from the beginning associated with the New English Art Club, where his contributions were welcomed by a rather select group of admirers Otherwise he rarely exhibited his work, but several examples can be seen in the Tate Gallery, and in this gallery a special exhibition of his work was held last October This was a high tribute to his output and his ideals

During the war Tonks returned to medicine, doing certain surgical work abroad, and especially acting as an artist Here both his artistic and surgical qualities were displayed in a series of pictures of the victims of facial injuries who were treated at Sidcup These pastels were usually drawn in two stages, the first showing the injuries to be treated and the second the results of treatment, but occasionally Tonks's detailed knowledge of anatomy would emerge in an outline drawing for the scheme of restitution Seventy two of these pictures—69 pastels and 3 pen and ink drawings—are included in the army medical section preserved in the museum of the Royal College of Surgeons of England They form a striking testimonial to Tonks's *masterful drawing*, while the humanity of their object mitigates their terror

SUSCEPTIBILITY OF CHILDREN TO LEPROSY

Marchoux and Chorine[1] contend that children are not more susceptible to leprosy than adults, but owing to their inexperience and other circumstances of childhood are more likely to be exposed to infection This opinion they base on the analogy of rat leprosy They found that adult rats are as easily infected as new born rats by contact with leprous animals which show bacillus bearing ulcers, the infection apparently goes through the conjunctiva and attacks first Harder's gland at the inner canthus and afterwards the adjacent sublingual and submaxillary lymph glands When rat leprosy was induced by inoculating bacilli into the skin it was noted that the speed and severity of the infection increased with the dose of organisms and the size of the area over which they were distributed It is concluded therefore that the apparently increased susceptibility of children to Hansen's organism is due to their greater exposure, and the greater likelihood of infection entering over a large skin surface because of their close contact, naked, with their infectious parents

The question arises, however, how far it is justifiable to argue from rat leprosy to human leprosy True the two diseases resemble each other in some respects Hansen's bacillus and Stefansky's bacillus are similar in morphology and staining reactions, both are difficult or impossible to cultivate in vitro, and progressive disease has been produced by each in only one genus But the most characteristic feature of human leprosy is the *affinity of B lepræ* for the peripheral nerves and this is apparently absent in rat leprosy The contention that children are not more susceptible to leprosy than adults is not borne out by the leprolin test, which (there is good reason to believe) gives a delicate indication of the protective response of the human skin to invasion by Hansen's bacilli Compared with that of adults the skin of children reacts much less to intradermal injection of a sterilised suspension of leproma, and this variation of reaction probably has an important bearing on resistance in early and later life

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[1] Marchoux E and Chorine V *Ann. Inst Pasteur* December 1936 p 583

PRINCIPLES OF MEDICAL STATISTICS

III.—PRESENTATION OF STATISTICS

In dealing with a series of observations the first object must be to express them in some simple form which will permit, directly or by means of further calculations, conclusions to be drawn. The publication, for instance, of a long series of case results is not particularly helpful (beyond providing material for interested persons to work upon), for it is impossible to detect from the unsorted mass of raw material relationships between the various factors at issue. The worker must first consider the questions which he believes the material is capable of answering and then determine the form of presentation which brings out the true answers most clearly. For instance, let us suppose the worker has amassed a series of after-histories of patients treated for gastric ulcer and wishes to assess the value of the treatment given, using as a measure the amount of incapacitating illness suffered in subsequent years. There will be various factors the influence of which it will be of interest to observe. Is the age or sex of the patient material to the upshot? Division of the data must be made into these categories and tables constructed to show how much subsequent illness was in fact suffered by each of these groups. Is the after-history affected by the type of treatment? A further tabulation is necessary to explore this point. And so on. The initial step must be to divide the observations into a relatively small series of groups, those in each group being considered alike in that characteristic for the purpose in hand. To take another example, in the Table showing the fatality rate from scarlet fever of hospital cases, children within each year of age up to 10 and in each five-year group from 10 to 20 are considered alike with respect to ages.

Table showing Hospital Cases of Scarlet Fever
1905–14

Fatality rate at ages

Age in years.	Number of cases	Number of deaths	Fatality rate ( )
0–	46	18	39·1
1–	383	43	11·2
–	881	50	5·7
3–	1169	60	5·1
4–	13 2	36	2·6
5–	1403	24	1
6–	1 71		1·7
7–	986	21	2·1
8–	804	0	0
9–	673	5	0·7
10–	1905	14	0·7
15 0	512	3	0·6

The fatality, or case-mortality, rate is the proportion of patients with a particular disease who die.

It is of course possible that by this grouping we are concealing differences. The fatality rate at 0–6 months may differ from the fatality rate at 6–12 months, at 12–18 months it may differ from the rate at 18–24 months. To answer that question further subdivision—if the number of cases justifies it—would be necessary. In its present form (accepting the figures of hospital cases at their face value) the grouping states that fatality declines nearly steadily with age, a conclusion which it would be impossible to draw from the 11 526 original unsorted and ungrouped records. The construction of a *frequency distribution* is the first desideratum—i.e., a table showing the frequency with which there are present individuals with some defined characteristic or characteristics.[1]

As a general rule the distribution should be drawn up on a fine basis—i.e., with a considerable number of groups, for if this basis prove too fine owing to the numbers of observations being few it is possible to double or treble the group interval by combining the groups. If, on the other hand, the original grouping is made too broad the subdivision of the groups is impossible without re-tabulating much of the material.

Statistical Tables

To return to the original table, this may be used in illustration of certain basic principles in the presentation of statistical data.

(i) The contents of the table as a whole and the items in each separate column should be clearly and fully defined. For lack of sufficient headings, or even any headings at all, many published tables are quite unintelligible to the reader without a search for clues in the text (and not always then). For instance, if the heading given on the left of the table were merely age it would not be clear whether the groups refer to years or months of life. The unit of measurement must be included.

(ii) If the table includes rates the base on which they are measured must be clearly stated—e.g., death-rate per cent, or per thousand, or per million, as the case may be (a very common omission in published tables). To know that the fatality rate is 20 is not helpful unless we know whether it is 20 in 100 patients who die (1 in 5) or 20 in 1000 (1 in 50).

(iii) Whenever possible the frequency distributions should be given in full. These are the basic data from which conclusions are being drawn and their presentation allows the reader to check the validity of the author's arguments. The publication merely of certain values descriptive of the frequency distribution—e.g., the arithmetic mean or average—severely handicaps other workers. For instance, the information that the mean age at death of patients with cancer of the lung is 51·8 years and with cancer of the stomach is 62·1 years is of very limited value in the absence of any knowledge of the distribution of ages at death in the two classes.

(iv) Rates or proportions should not be given alone without any information as to the numbers of observations upon which they are based. In presenting experimental data, and indeed nearly all statistical data, this is a fundamental rule (which, however, is constantly broken). For example, the fatality rate from small-pox in England and Wales (ratio of registered deaths to notified cases) was 42·9 per cent in 1917, while in the following year, 1918, it was only 3·2 per cent. This impressive difference becomes less convincing of a real change in virulence when we note that in 1917 there were but 7 cases notified, of whom 3 died, and in 1918 only 63, of whom 2 died.

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[1] The choice of groups and the group-interval and the calculation of averages and other values from the distribution are discussed in numerous text-books of statistical method—e.g., Wood and Rossell: An Introduction to Medical Statistics, London: P. S. King and Son. 193

(Though the low rate of 1918 *may* mark the presence of variola minor) "It is the essence of science to disclose both the data upon which a conclusion is based and the methods by which the conclusion is attained " By giving only rates or proportions (and by omitting the actual numbers of observations or frequency distributions) we are excluding the basic data In their absence we can draw no valid conclusion whatever from, say, a comparison of two or more percentages Even when the number of observations is small, 20–25 perhaps, there is no reason why a percentage distribution or a rate should not be calculated but, as discussed later, particular care will have to be exercised in drawing conclusions

(v) Full particulars of any deliberate exclusions of observations from a collected series must be given, the reasons for and the criteria of exclusion being clearly defined For example, if it be desired to measure the success of an operation for, say, cancer of the breast, it might, from one aspect, be considered advisable to take as a measure the percentage of patients surviving at the end of 5 years *excluding those who died under the operation itself*—i e , the question asked is "what is the survival rate of patients upon whom the operation is successfully carried out ? " It is obvious that these figures are not comparable with those of observers who have included the operative mortality If the exclusion that has been made in the first case is not clearly stated, no one can necessarily deduce that there is a lack of comparability between the records of different observers, and misleading comparisons are likely to be made Similarly one worker may include among the subsequent deaths only those due to cancer and exclude unrelated deaths—e g , from accident—while another includes all deaths, irrespective of their cause Definition of the exclusions will prevent unjust comparisons

Sometimes exclusions are inevitable—e g , if in computing a survival rate some individuals have been lost sight of so that nothing is known of their fate The number of such individuals must invariably be stated and it must be considered whether the lack of knowledge extends to so many patients as to stultify conclusions For instance, if 1000 patients were originally observed, 300 are known to be dead at the end of 5 years, 690 are known to be alive, and 10 have been lost sight of this lack of knowledge cannot appreciably affect the survival rate At the best, presuming the 10 are all alive, 70 per cent survive (700 out of 1000), at the worst, presuming the 10 are all dead, 69 per cent survive (690 out of 1000) But if 300 are known to be dead, 550 are known to be alive, and 150 have been lost sight of, the upper and lower limits are 70 per cent surviving (700 out of 1000, presuming the 150 are all alive) and 55 per cent surviving (550 out of 1000 presuming the 150 are all dead) an appreciable difference To measure the survival rate on only those patients whose history is known, or, what comes to the same thing to divide the 150 into alive and dead according to the proportions of alive and dead in the 850 followed up successfully, is certainly dangerous The characteristic "lost sight of" *may* be correlated with the characteristics "alive or dead" , in other words a patient who cannot be traced may be more likely to be dead than a patient who can be traced (or vice versa), in which case the ratio of alive to dead in the untraced cases cannot be the same as the ratio in the traced cases Calculation of the possible upper rate shows at least the margin of error

Beyond these few rules it is very difficult, if not impossible, to lay down laws for the construction of tables The whole issue is the arrangement of data in a concise and easily read form In acquiring skill in the construction of tables probably the best way is, as Pearl suggests, to consider critically published tables with such questions as these in mind "What is the *purpose* of this table ? What is it *supposed* to accomplish in the mind of the reader ? wherein does its failure of attainment fall ? "[2] Study of the tables published by the professional statistician —e g , in the Registrar General's Annual Reports—will materially assist the beginner

Graphs

Even with the most lucid construction of tables such a method of presentation always gives difficulties to the reader, especially to the non statistically minded reader The presentation of the same material diagrammatically often proves a very considerable aid and has much to commend it if certain basic principles are not forgotten

(i) The sole object of a diagram is to assist the intelligence to grasp the meaning of a series of figures by means of the eye If—as is unfortunately often the case—the eye itself is merely confused by a criss cross of half a dozen, or even a dozen, lines, the sole object is defeated The criterion must be that the eye can with reasonable ease follow the movement of the various lines on the diagram from point to point and thus observe what is the change in the value of the ordinate (the vertical scale) for a

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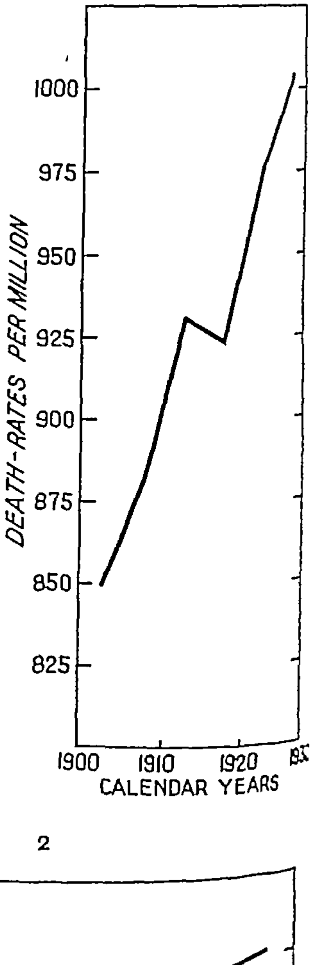
[2] Raymond Pearl Medical Biometry and Statistics Philadelphia and London W B Saunders Co Ltd 2nd ed 1930

1



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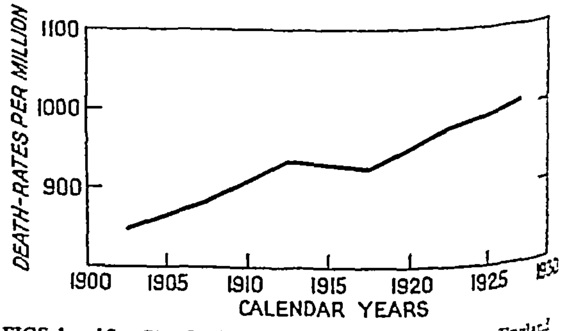
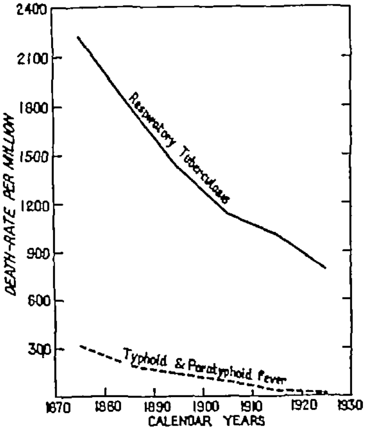


FIGS 1 and 2 —Standardised death rates from cancer in England and Wales in each quinquennium from 1901–05 to 1926–3 given change in the value of the abscissa (the horizontal scale)

(ii) The second point to bear in mind in constructing *and in reading* graphs is that by the choice of scales the same figures can be made to appear very different to the eye Figs 1 and 2 are an example Both show the same figures—namely the death rates (standardised) from cancer in England and Wales in each quinquennium between 1901 and 1930 In Fig 1 the increase in mortality that has been recorded appears at a cursory glance to be exceedingly rapid and of serious magnitude while in Fig 2 a slow and far less impressive rise is suggested The difference is, of course due to the difference in the vertical and horizontal scales In reading graphs therefore the scales must be carefully observed and the magnitude of the changes interpreted by a rough translation of the points into actual figures In drawing graphs undue exaggeration or compression of the scales must be avoided and it must be considered whether a false impression is conveyed as quite frequently happens if the vertical scale *does not start at zero but at some point* appreciably above it Graphs should always be regarded as subsidiary aids to the intelligence and *not* as the evidence of associations or trends That evidence must be largely drawn from the statistical tables themselves It follows that graphs should never be a *substitute* for statistical tables An entirely deaf ear should be turned to such editorial pleading as this if we print the graphs would it not be possible to take some of the tables for granted? Having given a sample of the process by which you arrive at the graph is it necessary in each case to reproduce the steps? The retort to this request is that statistical tables are *not* a step to a diagram they are the basic data Without these basic data the reader cannot adequately consider the validity of the author's deductions and he cannot do any further analysis of the data if he should wish without laboriously and inaccurately endeavouring to translate the diagram back into the statistics from which it was originally constructed (and few tasks are more irritating)

3



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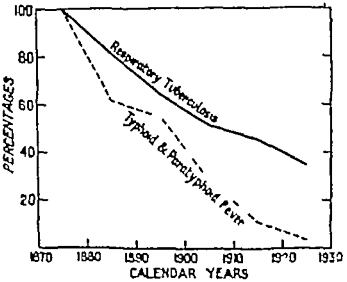

FIGS. 3 and 4.—Standardised death rates from (a) respiratory tuberculosis and (b) typhoid and paratyphoid fever in England and Wales In Fig 4 the rate from each disease in each decade is expressed as a percentage of the corresponding rate in 1871–80

The problem of scale illustrated in Figs 1 and 2 *is also an important factor in the comparison of* trend lines Fig 3 shows the trend of the death rates from respiratory tuberculosis and from typhoid fever in England and Wales from 1870 to 1930 Unless the scale of the ordinate (the vertical scale) is carefully considered the inference drawn from this *graph might well be that relatively* the mortality from respiratory tuberculosis has declined more than the mortality from typhoid fever Actually the precise reverse is the case—relatively typhoid fever has declined considerably more than respiratory tuberculosis. In 1921–30 the rate from respiratory tuberculosis was 34 per cent of the rate recorded in 1871–80 while the rate from typhoid fever was but 3·4 per cent of its earlier level *Absolutely* respiratory tuberculosis shows the greater improvement (from 2231 deaths per million in 1871–80 to 768 in 1921–30 compared with 321 and 11 for typhoid fever) but relatively typhoid fever shows the advantage If it is the relative degree of improvement that is at issue Fig 3 is insufficient For this purpose the rates in each decade may be converted into percentages based upon the rate in the first decade as is shown in Fig 4

It is a sine qua non with graphs as with tables that they form self contained units the contents of which can be grasped without reference to the text For this purpose inclusive and clearly stated headings must be given the meaning of the various lines indicated and a statement made against the ordinate and abscissa of the characteristics to which these scales refer (vide Figs 1 to 4)

Summary

For the comprehension of a series of figures tabulation is essential a diagrammatic representation (*in addition to tables but not in place of them*) is often of considerable aid Both tables and graphs must be entirely self-explanatory without reference to the text As far as possible the original observations should always be reproduced (in tabulated form showing the actual numbers belonging to each group) and not given only in the form of percentages—i e *the percentages of the total falling in each group* The exclusion of observations from the tabulated series on any grounds whatever must be stated the criterion upon which exclusion was determined clearly set out and usually the number of such exclusion stated Conclusion should be drawn *from graphs only with extreme caution and only* after careful consideration of the scales adopted

A B H

SPECIAL ARTICLES

THE RELATIVE AS DONOR

CHANCES OF COMPATIBILITY

BY E E POCHIN, B Chir Camb, M R C S Eng
FORMERLY HOUSE SURGEON TO THE SURGICAL UNIT, UNIVERSITY COLLEGE HOSPITAL LONDON

Now that blood transfusion is a common event and continuous transfusions are being increasingly used, it is often necessary to summon such relatives as are healthy, willing, and available for tests of compatibility as donors In many cases the number of such relatives may be small and the husband (or wife) or a friend may offer instead It seemed of interest to calculate the probability that a relative would be compatible, and what relationship would be the most favourable Would a brother be less likely to be compatible than a son or a father, and how would they compare with the husband or other unrelated person in chances of compatibility? The results obtained are given below (Tables I and II), and details of the method of calculation follow It should be realised that the results are theoretical and not experimental

TABLE I

Percentage Chance of Suitability when the Donor is to be of the Patient's Own Blood Group

Patient s group	Donor—			
	Father or mother	Brother or sister	Son or daughter	Unrelated
	Per cent	Per cent	Per cent	Per cent
I (AB)	18	34	16	3
II (A)	66	69	66	43
III (B)	39	47	41	7
IV (O)	68	71	68	46
Average, whole population	64	67	64	41

II

Percentage Chance of Suitability when the Donor is to be of any Compatible Group

Patient s group	Father or mother	Brother or sister	Son or daughter	Unrelated
I (AB)	100	100	100	100
II (A)	95	95	95	90
III (B)	72	74	73	54
IV (O)	68	71	68	46
Average whole population	81	82	81	67

METHOD OF CALCULATION

The probability will depend upon the mechanism of inheritance of the blood groups and upon the actual frequency of the various groups in the population in question

The present calculation ignores cases in which serum of one group is found to agglutinate cells, apparently of the same or compatible group, on direct matching

Bernstein's theory of the inheritance of the blood groups (Bernstein 1924, 1925) is taken as the basis of the calculation This theory states in effect that the blood group of an individual is determined by his possession of a pair of genes, one derived from each parent while each of the genes is one of three possible types A B or R The six possible pairs are thus A + B (written AB) AA AR BB BR and RR the order of the genes in the pair being irrelevant Blood Group I consists of all who possess both an A and a B gene—i e type AB Blood Group II consists of all who possess an A but no B gene and thus includes both types AA and AR Blood Group III consists of all who possess a B but no A—i e types BB and BR Blood Group IV consisting of those who possess neither A nor B genes consists of type RR

Each parent passes on to his child one or other of his two genes Thus the children of the mating AA × BB are all AB (Group I), while the children of the mating AR × BR are AB, AR, BR and RR in equal proportions

The frequency of the various blood groups in the English population has been established (Hirszfeld 1919). It is also possible (Wiener 1934) from these frequencies, and assuming the population to be well mixed by marriage, *to separate the Group II frequency into the respective* frequencies of its two parts corresponding to AA and AR, and similarly for Group III

The actual figures obtained are as follows —

TABLE III

Group	I	AB— 3 1	per cent	of population
„	II	AA— 7 2	„	„
		AR—36 2	„	„
„	III	BB— 0 27	„	„
		BR— 6 9	„	„
„	IV	RR—46 4	„	„

Now, once it is known that a patient is, say, Group IV, it is easy to calculate the likelihood that a child is Group IV, and so compatible, assuming that a man's choice of wife is independent of her blood group Thus supposing the patient to be a Group IV man, 46 4 per cent. of all possible wives are also Group IV, and all the children of this RR × RR marriage will be RR and compatible with the patient A further 36 2 per cent of possible wives are type AR, of which match the children are equally likely to be AR (incompatible) and RR (compatible) Thus of this match, in half the possible cases (18 1 per cent) the child will be compatible Similarly the wife may rarely (6 9 per cent chance) be of type BR, of which match half the children will be compatible adding a 3 45 per cent chance of the child being compatible

The other three possible matings, with AB, AA, and BB, *contribute no RR children compatible with the RR* father Adding these probabilities of a compatible child, it is found that, corresponding to the full "100 per cent of wives" 46 4 per cent + 18 1 per cent + 3 4 per cent = 67 9 per cent of children will be compatible with a Group IV patient This argument applies equally whether the patient is a male or a female

When the patient is of Group II (or III) the calculation is longer, since it is necessary to take into account the fact that of Group II patients 17 per cent are type AA and 83 per cent are type AR, the children differing in the two cases Proceeding as before, and remembering that AA and AR bloods are identical in their agglutination reactions, and hence compatible, the figures are obtained that an AA patient has a 94 8 per cent chance of a Group II child, while an AR patient has a 60 8 per cent chance The average chance of a Group II patient having a Group II child is thus the average between 94 8 per cent and 60 8 per cent in the ratio of the frequencies of AA and AR, giving —

$$\frac{17}{100} \times 94\ 8 \text{ per cent.} + \frac{83}{100} \times 60\ 8 \text{ per cent} = 66\ 4 \text{ per cent}$$

This method of calculation is available both for children of the same group, and for children of any compatible group For a Group II patient the first calculation adds up the chances of a Group II child, the second, the chances of a Group II or IV child

For estimating the chance of compatibility of a parent, the analysis is rather similar Assuming again that mating takes place *regardless of group, the average* frequency of any particular mating can be estimated. Thus the frequency of an AB individual being 3 1 per cent, in 3 1 per cent of all matings the husband will be AB and in 3 1 per cent *of these* matings the wife will also be AB so that the AB × AB mating occurs with frequency 3 1 per cent × 3 1 per cent = 0 096 per cent Similarly the AB husband–AR wife mating has frequency 1 1 per cent as has also the AB wife–AR husband mating so that the frequency of AB × AR disregarding the sex of each parent amounts to 2 2 per cent of all matings

Now it is known what children, in what proportions, result from each mating. Thus given the group of the child, we can calculate the relative chance that it resulted from each of the possible matings. And in each possible case it is known whether one or both of its parents is of compatible group, and hence the chance that a parent is compatible.

To give an instance, suppose that the patient is of Group IV, represented by RR. An RR patient may be the child of any one of six matings. Column (a) of Table IV shows these matings, and column (b) the frequency of each as a percentage of all matings. Column (c) gives the proportion of children of each mating who are RR. Column (d), given by (b) × (c), thus gives a measure of the relative chance that the RR patient is a child of each mating. Clearly a mating all of whose offspring are RR is a more likely parentage for the RR patient than an equally frequent mating of which only a quarter of the children are RR. Column (e) expresses this chance of each origin as a percentage.

Column (f) now states the proportion of the parents who are RR and hence compatible, and (g), given by (e) × (f), is the final probability that a parent will be compatible.

TABLE IV

(a) Mating	(b) Frequency of mating	(c) Proportion of children RR.	(d) Relative chance.	(e) Absolute chance.	(f) Proportion of parents RR.	(g) Chance of compatible parent
	Per cent		Per cent	Per cent		Per cent.
1 RR × RR	21·5	1	21·5	46·5	1	46·5
2 RR × AR	33·6	½	16·8	36·5	½	18
3 RR × BR	6·4	½	3·2	6·9	½	3·5
4 BR × AR	5·0	¼	1·2	2·6	0	0
5 AR × AR	13·1	¼	3·3	7·2	0	0
6 BR × BR	0·5	¼	0·1	0·2	0	0
—	—	—	46·1	99·9	—	68·2

Thus a parent will be compatible with a Group IV patient in 68 per cent of cases. It should be noticed that this is not the same as the chance that one or other parent is compatible, which is obviously greater, since if the first parent is incompatible there is still a chance that the second may be compatible. Thus in this case it is seen from Column (a) that in rows 1, 2, and 3 *one of the two* parents is RR, the corresponding factor in Column (f) becoming 1 for these, and the total now becoming 90 per cent.

The calculation for the composite Groups II and III is performed in a manner similar to that used before for children. Thus the probabilities are obtained for AA and AR separately and then averaged appropriately.

Further, it is clear that the probability of a brother or sister proving compatible is readily obtained by almost the same method as for parents. Instead of inquiring what proportion of the two parents is compatible in each family, we inquire what proportion of the (other) children is compatible. It is to be noted that the chance of occurrence of any particular assortment of genes is unaffected by which assortments have already occurred in the family, just as the chance of a penny falling "heads" depends only on the details of the toss, and not on the results of previous tosses.

Thus in the case of an RR patient the analysis is the same as in Table IV until column (e), after which it is as Table V.

In this way all the probabilities in Tables I and II can be obtained. It is true that in any one family the *proportion of children of the various groups will not be* exactly, or even approximately, according to theoretical expectations. If the assumptions underlying the calculation are true, however, the probabilities would be confirmed by taking a large enough number of cases, and are thus the correct expectations in each particular case.

TABLE V

(a) Mating	Children	(e)	(h) Proportion of RR children	(i) Probability of compatible brother or sister
		Per cent		Per cent
1 RR × RR	RR	46·5	1	46·5
2 RR × AR	RR AR	36·5	½	18·2
3 RR × BR	RR BR	6·9	½	3·5
4 AR × BR	AB AR BR RR	2·6	¼	0·6
5 AR × AR	AA 2AR RR	7·2	¼	1·8
6 BR × BR	BB 2BR RR	0·2	¼	0·0
—	—	—	—	70·6

In the case of unrelated persons, these probabilities may legitimately be combined. Thus if the chance that such a person should be of different group from a patient is 10 per cent, the chance that three such persons should all be of different group from the patient is (10 per cent.)³ = 0·1 per cent. The same argument cannot, however, be applied to relatives. Thus if an RR patient has an incompatible brother they cannot be the children of an RR × RR mating, which gives only RR children; and for the remaining possible families the chances of a compatible brother are not so favourable, and the expectation for the next brother tested must be revised accordingly. If, on the other hand, a parent has been found to be incompatible, certain families are ruled out, but in the remainder the second parent is certain to be compatible except in the few cases in which a child is incompatible with both parents. The chance of compatibility for the second parent may thus prove to be greater.

TABLE VI

Chance of Compatibility of Second Relative

BLOOD TO BE OF PATIENT'S OWN GROUP

Donor	Parent	Brother or sister	Child
	7[illegible] per cent	46 per cent.	40 per cent

BLOOD TO BE OF ANY COMPATIBLE GROUP

Donor:	Parent.	Brother or sister	Child
	72 per cent.	44 per cent	36 per cent.

Table VI gives the chances (weighted average for all groups) for a second relative of each kind to be compatible, a first relative *of that kind* having proved incompatible.

CONCLUSIONS (SEE TABLES I AND II)

1. Of the near relatives a brother or a sister is the most likely to prove compatible as a donor, but the advantage is negligible except in the case of a Group I patient requiring a transfusion of blood of the same group.

2. When blood of the patient's own group is required the advantage of relatives over unrelated persons is large, especially in the rarer groups, I and III. Two unrelated persons are equivalent to one relative in chance of providing a donor. A relative is twice as likely to be compatible as not.

3. When blood of any compatible group is sufficient the advantage of the relative is less. One and a half unrelated persons are equivalent to one relative. A relative is four times as likely to be compatible as not, whereas an unrelated person is twice as likely to be compatible as not.

4. It is also found that if one parent has proved to be incompatible the other parent has a nearly equal chance of proving compatible (Table VI). If, however, one child has proved to be incompatible, any further child has a decreased chance of proving compatible, and the same applies for brothers and sisters. In fact, when blood of any compatible group is sufficient, if one son (or brother)

has already proved incompatible, an unrelated person is much more likely to be compatible (67 per cent as against 40 per cent) than another son (or brother)

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MEDICINE AND THE LAW

Medical Certificate Signed by Unregistered Practitioner

William Mellor, of East Dulwich-road, East Dulwich, was fined £10 and 20 guineas costs on Jan 6th at Lambeth police court for offences against Section 40 of the Medical Act One summons charged him with wilfully and falsely using the title of "Doctor of Medicine," the other with wilfully and falsely using the description of "medical examiner," thereby implying that he was a registered practitioner The defendant's name was not, and never had been, on the Medical Register The offences were of some public importance since they arose in respect of a medical certificate given to an applicant for an air pilot's licence The Air Ministry requires a medical examination in such cases in order that the medical fitness of the applicant may be assessed A number of questions must be put by the medical examiner who must enter various particulars on a form The form is headed by a preliminary note stating that the medical examiner must be a registered medical practitioner with British qualifications Mellor signed in the space prescribed on the form for the signature of the medical examiner he added his qualifications as "M A., M D , B Sc , Lic Hom Med (Ind)" It was the "M D" in this list which got him into trouble In effect also he had put himself forward as a medical examiner who possessed the required British qualifications In the witness-box he stated that, when he signed the prospective pilot's application form, he had not noticed the printed words "Medical Adviser" This abstraction of mind the court was evidently unable to accept Mellor produced several framed certificates and diplomas, he said he held four degrees obtained after examinations conducted in London and Liverpool under extension arrangements with a university at Kapurthala in India and other institutions in America It is possible that the Air Ministry officials had their suspicions aroused by the over simplification of the entries made by Mellor Against "visual acuity," for instance, he had written "v good" without filling in the details which the form required

A third summons related to the name plate exhibited on the railings outside the defendant's address It contained the description "Dr Wm Mellor (India), Homœopath and Osteopath, U S A" This became the basis of a charge of having wilfully and falsely used the description of doctor thereby implying that he was registered under the Medical Act The magistrate dismissed this third summons being presumably not satisfied that Mellor had "wilfully and falsely" misdescribed himself in view of the evidence of Indian and American qualifications which the prosecution was hardly in a position to disprove The serious element in the case was the pretence of being a registered medical practitioner for the purpose of the medical certificate of an applicant's physical fitness to pilot an aeroplane The Medical Defence Union does good service to the public as well as to the medical profession in undertaking proceedings of this kind It is seldom an easy matter to obtain convictions under Section 40, where the statutory expression "wilfully and falsely" introduces technical difficulties It is not unreasonable to assume that unregistered practitioners would usually like to be taken for registered practitioners Occasionally it is true, an unregistered man, when charged under Section 40 of the Act, protests that nothing was further from his thoughts than to pretend to be a fully qualified doctor If so, as Lord Hewart hinted not long ago in the High Court, there are plenty of ways by which the unqualified man can differentiate himself in the description he adopts To call himself "doctor" is not one of them

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

EDINBURGH ROYAL INFIRMARY

THE annual report of the Edinburgh Royal Infirmary for 1936 gives interesting figures of advance during the past year There were 21,568 in patients, and of the 20,612 whose treatment had been concluded, 5536 were medical cases and 15,076 surgical. On an average there were 965 52 patients a day (including 72 children) with a length of stay of 17 14 days (on the medical side 26 04 days, and on the surgical 13 87) The death rate was 6 2 per cent, or after deducting deaths within 48 hours, 4 3 per cent Operations in the in patient theatres amounted to 11,682 There were 72,543 new out-patient cases admitted, with 379,688 attendances Motor accidents accounted for 415 admissions to the wards—an increase of 49 over the previous year—and 557 to the out-patient department Legally, the Infirmary could claim compensation for the cost of maintaining these cases, but in practice it was found that the amount received did not cover half the cost involved The managers of the hospital regretted that it had not been possible to effect any reduction in the waiting list

The work on the new maternity pavilion and nurses' home has been delayed by bad weather during the winter months, but it is hoped that these buildings will be ready for occupation by the end of 1937 Accommodation for sick nurses is being added to the new home at an extra cost of £6700 The full building scheme will cost about £500,000, of which some £300,000 has been contributed, and the managers propose shortly to make an appeal to the public for the additional £200,000 Important and far-reaching alterations are being carried out in the X ray department, new apparatus is being provided, including a very powerful tube primarily for the treatment of cancer, while the staff has been considerably increased

A cause of concern to the managers has been the growth in expenditure, amounting to £40,000 in ten years, and they earnestly appeal for new and greater subscriptions The total ordinary expenditure amounted to £169,694, an increase over the preceding year of £12 996, and the net result of the year's work showed a deficiency of £77,006 Fortunately, the sums for general purposes received by legacies and special donations amounted to £78,659, and it has thus been possible to meet all outgoings without drawing on invested income A gratifying feature has been an increase of £3759 in the amount received from the League of Subscribers The system of budgeting adopted a few years ago enables a strict control to be kept on all outgoings but extraordinary expenditure owing to works of reconstruction and alteration has again been high, amounting to over £28 000

A NEW NURSES HOME IN GLASGOW

A scheme that will be a notable city improvement by adding to the open spaces near the Cathedral and by greatly contributing to the beauty of Cathedral square was referred to at the annual New Year's meeting of the managers of Glasgow Royal Infirmary with the nursing staff The new nurses home the design for which has now appeared in the public press, is to be erected at a cost of £100 000 Tenements belonging to the Royal Infirmary and to the corporation are to be demolished while it is hoped that the small Cathedral Hall may be transferred to another site The only building then left besides the home would be Provands Lordship the oldest house in Glasgow The new home is to be H-shaped in design consisting of a centre block and wings with the ground between the wings laid out with lawns and flower beds The frontages will extend to 200 feet with side frontages of 128 feet All the bedrooms will be single and supplied with hot and cold water while there will be ample accommodation for recreation writing reading study and work rooms Automatic electric lifts will give access to all floors The construction is to be partly of light cream polished sandstone and partly of purple-grey brick

PANEL AND CONTRACT PRACTICE

The District Medical Service

A SERVICE which affects some 3000 practitioners and in some areas a not inconsiderable section of the population is obviously of importance to the profession and the public Though the appointment of a 'district medical officer under this specific designation dates from 1847 arrangements for medical attendance on the poor prevailed generally before this period Previously to the Poor Law Act of 1834 provision rested with the overseers of each parish who contracted with a local practitioner the method has its relic in the term parish doctor still occasionally used Under the 1834 Act the duty passed to the newly constituted boards of guardians who were urged by the Poor Law Commissioners to take into early consideration the appointment of medical officers The effect of legislation has been towards a centralisation of control further manifested by the Local Government Act 1929; thus before 1834 responsibility rested with 15 000 parish officers and in 1929 the responsibility was transferred from 609 boards of guardians in England to the 132 councils of county boroughs and county councils

A century ago the service seems to have been very extensive in scope and to have provided the usual form of medical attendance on a large section of the wage-earning population It was also more of a rural problem than it is to-day though the practice probably continuous with former times may still prevail under which an agricultural labourer with a large family is regarded as entitled to medical relief Increasing urbanisation has moved the centre of interest to the towns and in recent years the unfortunate effect of prolonged unemployment has especially in certain areas largely increased the numbers of those compelled to seek medical relief This variation may be illustrated by the following figures which show the number of persons (on Sept 26th 1930) per 10 000 population in receipt of poor relief—an approximate index of medical relief

Counties		County Boroughs	
Bedford	90	Coventry	116
Wilts	150	Brighton	187
Durham	717	Newcastle upon Tyne	687
Glamorgan	682	Liverpool	1068

No uniform method of providing medical attendance has prevailed The most usual method has been the appointment of local practitioners on a part time salary basis and the majority of medical relief districts are thus officered to-day In the earlier years after 1834 the appointment was frequently put up to tender a practice which was obviously undesirable and which came to be discountenanced by the Poor Law Commissioners. Salaries were fixed at the discretion of individual boards of guardians and consequently show considerable variation throughout the country In some rural districts remuneration may have remained unaltered with a dwindling population; in urban districts on the other hand especially in those with a heavy incidence of unemployment there may have been altogether insufficient adaptation to the increased demands Some authorities have latterly devised methods of correlating payment to work done The system is too well known to require elaboration; the officer appointed carries out his duties in the ordinary routine of general practice

Less frequent has been the appointment of whole time officers The first such appointment was in operation at Leighton Buzzard in 1840 but the system has not been extensively followed Such officers may devote the whole of their time to district medical duties combined perhaps with those of public vaccinator a method which prevails for instance in parts of Birmingham and West Ham in Smethwick and Middlesbrough; the major part of the work is done at central dispensaries usually attached to relief stations A criticism made of such service is its obvious relation to the Poor Law

Whole time officers again may combine the duties of district medical officer with other functions such as the charge of a public assistance institution or an appropriated hospital thus providing a wider range of interest and a linking up of in patient and out patient treatment In several districts of London the duties of district medical officer are carried out by the resident staff of L C C hospitals Again but very exceptionally the duties may be combined with those of medical officer of health to one or more district councils

THE FREE CHOICE SYSTEM

These have until recent years been the customary methods by which the work has been conducted Since the introduction of the Local Government Act 1929 this service has with other functions transferred from boards of guardians come under review by the local authorities concerned but it remains a poor law function as there exist no power under the Public Health Acts for the provision of a domiciliary medical service While the majority of authorities have continued on former lines with perhaps some adjustments others have introduced what is known as the free choice system " whereby the work is thrown open to a panel of practitioners willing to act The idea is not new, it was suggested in a memorandum submitted by the British Medical Association to the Poor Law Commissioners in 1839, and has been in operation in a small area in Kent since 1928 Its re-emergence as a policy is due primarily to the view that it would tend to minimise the association of the service with the Poor Law and it has been stimulated by the former lapse from medical benefit of many insured persons and the consequent resort of these and their families to the poor-law provision, usually involving a change of medical attendant

The system cannot be put into immediate and full operation in any area, for district medical officers have security of tenure, so that there can only be partial introduction as existing appointments fall vacant It was first introduced in Newcastle-upon Tyne in 1933, and in the same year was adopted in Wiltshire and East Ham, in 1935 it applied to 7 out of 10 medical relief districts in Newcastle upon-Tyne, to 18 out of 68 in Wiltshire, in East Ham to the whole borough except one small district Introduction to a varying extent has since taken place elsewhere as, for example, Warrington county borough, and the counties of Cambridge, Cornwall, East Suffolk, Essex, and Glamorgan The general operation of the system is much the same in all areas but there is considerable diversity in remuneration Thus, in Newcastle the payment is 5*s* per patient-quarter for short-period cases, and £1 a year for those under treatment for more than two consecutive quarters, in East Ham the rate is 16*s* per patient year, in Wiltshire it is 25*s* for each case seen during the calendar year (20*s* in one district), and here the payment covers the supply of drugs The service provides a patient with the doctor of his choice, and is thus in line with private practice and with medical benefit under the National Health Insurance Acts It is likely to be more costly than the other methods mentioned, which however have not infrequently been underpaid Its possible reaction on public assistance will be scrutinised by administrators It introduces the local authorities to a closer contact with the general body of practitioners in their areas, and this may prove a prelude to further developments

Dr J A Charles has reported[1] on the working of the system in Newcastle, it would be well if similar comprehensive reports were provided from other areas where the system has been in operation for a sufficient period so that fuller details of its working may be available for the guidance of others No medical service can in these days remain static, and this latest development in the district medical service will be watched with interest in its relation to the sick person the medical profession, and public administration

Capitation Fee for Adolescents

As we set out a fortnight ago the Ministry of Health and the Insurance Acts Committee failed to agree about the terms on which medical benefit shall be provided for young people between leaving school and reaching insurable age The I A C decided to consult representatives of local medical and panel committees about the impasse thus created and a conference was held on Jan 7th in the Great Hall at B M A House with Dr D Elliot Dickson of Lochgelly Fife in the chair Despite the prevailing epidemic a fully representative gathering was secured although the list of deputies was long The report of the I A C having been moved by Dr H C Jones the conference agreed, at the suggestion of Hastings to the discussion being conducted in private At the conclusion it was announced that the following resolutions had been passed without dissent

That the offer of the Minister of Health of a capitation fee of 7*s* 6*d* for medical attendance on insured persons under 16 years of age be rejected

That in view of the inadequacy of the existing capitation fee, and pending the result of negotiations for its increase, this conference is not prepared to accept for attendance on insured workers under 16 years of age a capitation fee less than that paid for adult insured workers

That this conference recommends insurance practitioners to decline service for the provision of medical benefit for insured workers under 16 years of age on the terms offered by the Minister of Health

That the I A C be authorised to take action in the light of the decisions reached by the conference

NON MEDICAL COMMENT

In an article entitled Views of the Doctors the *National Insurance Gazette* sets out fully the case made by the I A C, quoting almost verbatim the general statement of that committee's views summarised in our columns a fortnight ago The *Gazette* itself sees no difficulty about either of the question outstanding between the I A C and the Ministry The doctors "have complained, more or less bitterly," the *Gazette* remarks, "of the amount of clerical work thrown upon them—all of it distasteful to professional men who could spend their time in much better ways other than doing mere clerk's work The only point is that the doctors cannot be allowed to say that it is a big thing when they want paying for it, and nothing when they have to give it up" On the second point—are adolescents in need of the same amount of medical attention as the existing insured population?—the *Gazette* suggests that the reply "must be based mainly on medical and statistical knowledge", concluding, "We are interested in a fair settlement for two reasons As citizens and taxpayers we want the State to get a square deal as National Health Insurance workers we want the benefit to the school leavers to be satisfactory"

Retirement of Sir Walter Kinnear

The retirement, on Jan 1st, of Sir Walter Kinnear from the position of controller of the Insurance Department of the Ministry of Health, which he had held since 1919, deprives the public service of one of its most distinguished and popular members As a student at the Royal University of Ireland, he had a brilliant career, graduating with honours in mental and moral science, and soon became a prominent figure in the insurance world In 1911 he was appointed deputy chairman of the Irish National Health Insurance Commission, and during the later years of the war he was seconded to the English Commission His success in handling the difficult problems that beset the inception of the health insurance system both in Ireland and in England clearly showed that he would be in his right place as head of the Insurance Department of the newly constituted Ministry of Health He was not only a highly efficient and popular administrator, with the personal charm characteristic of many of his countrymen, but his thorough grasp of the principles of insurance in all their bearings made him an international authority on the subject His voice was influential at Geneva, and last year, by special request, his services were made available to the Australian Government to assist in exploring the possibilities of national insurance in Australia He carries with him into retirement the good wishes of all who were associated with him in his long and distinguished career

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[1] *Lancet* 1936 2, 1301

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month his name can be seen later in the half yearly index

FROM A PUBLIC HEALTH CLINICIAN

III

This is coronation year and different coronation thoughts pass through our minds—to nearly all a procession is one of the foremost If we personally do not want to see the procession it is certain that some members of our family will so wish Granted the time I should like to see the coronation procession if that were all but there will be crowds and crowds and a very early start will be necessary unluckily it is not possible to take a seat at 11 25 for an 11 30 procession and then leave quietly Every one in their lifetime should see one great procession—mine was the funeral procession of King Edward VII The night before I had spent over 4 hours in a queue to see the lying in state at Westminster Hall and then came away disappointed Fortunately the crowd was not as the papers declared pervaded by a spirit of silent reverence, and there were many humorous incidents but it was tiring for all that, and left me determined never again to queue up for anything So next day I arose late and set off to see the procession Walking in mid road along the route the vastness of the crowds impressed me Now and again I sidled one way or the other to secure a stance but a chorus of protests moved me on Suddenly it struck me that when the procession passed the side roads would be closed so I took up a humble position at the back of the crowd at a point where a side road entered confident that when that road was closed I should be propelled willy nilly into a front place and so indeed it befell.

Passing through life one has at times similarly useful inspirations or experience suggests something that has not yet occurred to others; at the large cheap restaurants where I take my meals I have noticed that small waitresses are usually the quickest an observation that has proved time saving Another similar discovery was that if when waiting and waiting to be served in a crowded room I sat back and obviously read a large evening paper steps were soon taken to secure service It would be interesting if others would give us the advantage of similar discoveries among the smaller things of life.

* * *

Most practitioners can narrate experiences outside the routine of normal medical practice Thirty years ago when acting as locum in a Hampshire practice I had as temporary partner a wise and observant practitioner Called one day to see a blind woman in later middle age, the patient told me that during the night her husband dead some 10 years had visited her stood at the foot of the bed and conversed pleasantly She had been blind for some 15 years but averred that on this occasion she had seen her husband as clearly as she had ever seen in her best years During the afternoon I told my partner the story and he remarked She ll be dead before to morrow I asked why? The patient was ailing but there was nothing to justify such a prognosis They always die when they tell those stories was his reply

Since then my experience has confirmed that practitioner s belief An old lady 10 years a widow told me her husband had visited her and she saw him more clearly than I see you now though she had never seen him since death and was not at the time thinking of him. Within 12 hours that patient had died also and it has happened similarly with 2 other patients It is not only husbands or wives that are seen but any intimate friend or relative who is no longer alive.

Speaking to a clergyman with a far more intimate experience of dying folk than I am ever likely to acquire, he told me of several similar instances he had met with and believed that if the patient was sufficiently conscious to describe it such an experience would be found to be usual. As this is not a theological lecture I will pass over the explanations he offered; for myself I have no explanation and am left wondering My own *experience of such events* is too limited for any generalisation errors of observation or narration may have crept in I wonder

* * *

Ornithology is rather a favourite pastime for doctors with botany a close second We are speaking of course of the active minded members of the profession or would it not be more correct to say natural history minded for many if not the majority who find an alternative solace in bridge or golf have equally active minds The study of bryology and mycology meaning by that mosses and fungi is less popular and yet equal in interest to botany The mosses are difficult because a proper study entails low power microscopy but if the observer remains a dilettante as previously advised and intelligent recreation is his chief objective resort to the microscope will be seldom needed. For fungi a pocket lens should suffice but this form of life presents a field quite equal to that of botany My first discovery of *Clathrus cancellatus* a large fungus showing a wide grey network with large mesh was indeed a red letter day; and then there are various stag horn and stink horn fungi some of them bearing ancient and almost lewd latin names It is interesting also to note the varied forms of parasitism displayed and how the death of trees and other vegetation is caused The ways of nature are indeed ruthless

The difficulties of the fungus hunter are that wet weather is always best and may be essential for certain forms and that many fungi have a distinct smell sometimes a most offensive distinction My children trained in natural history methods, will stop suddenly when passing through a wood and call out stink horn somewhere near And there are others almost as bad as the stink horn The hunt for fungi is called for some reason a foray though I know not why akin perhaps to the special names—flocks drove coveys—of groups of various animals or to names given to different nests as earth dray or holt I should like to see more doctors interested in fungi

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Apart from natural history history itself provides a fascinating if more sedentary hobby Gibbon s

"Declme and Fall" presents useful pabulum for a train journey, far better than most novels provided always that the reader has not already read it, as so many have done, when too young fully to appreciate the charm I read Gibbon's "Declme and Fall" for the first time in trains, and it took quite a long time I am now engaged on Grote's "History of Greece" which has not quite the same attractions and will take longer, in fact it seems possible that when death overtakes me, Grote's History will still be unfinished

The secret of enjoyment of such reading is never to read for instruction, never to regard the reading as a lesson, never to attempt to remember, but to read purely for amusement and recreation Novels and films show us life as it might be but certainly is not, history presents life as it was and still very much is Gibbon is not the only work commended, there are English histories, French histories, and period histories Then a similar field is covered by biographies which may give an interesting high power view of some special time or place

A knowledge of human nature is of the highest importance to any doctor, and his life's work presents constant opportunities for expanding his knowledge, but to know human nature one lifetime is not enough, history may assist

* * *

Archæology attracts many devotees, it used to attract me and many pilgrimages have I made to old buildings and well known churches, but to day the taste has passed, as tastes will sometimes, possibly the result of too many archæological excursions The study has its limitations and has not the attraction of natural history, but it is interesting to form conceptions of the habits and life of our ancestors disclosed by a study of their buildings and remains.

The past deserves respect and may provide lessons and examples useful to day, but if the sixteenth century had been solely devoted to the past we should have missed many of the renaissance productions which receive homage to day, and should still be admiring rush covered floors and the rather clumsy architecture of the Dark Ages Perhaps team work here, as in medicine, is best Those who feel so impelled will produce for us new forms of art and architecture while the archæologists criticise these from their knowledge of the past

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CORRESPONDENCE

INFECTION AND DISINFECTION

To the Editor of THE LANCET

SIR,—The lecture by Sir Weldon Dalrymple-Champneys reproduced in your issue of Jan 9th will be read with interest by practitioners other than medical officers of health and should appeal to the educated layman I should like to refer to three points

First, whooping cough If it is true that the patient has already ceased to be infectious *by the time the "whoop" appears*, then many young prisoners may be liberated safely and much domestic inconvenience ended We all know that the whoop may persist long after infection has disappeared, but experience (apparently fallacious) has suggested that the early convalescent may be a source of infection Moreover, if this be correct, our present efforts at prevention are futile

The inclusion of infectious disease blocks in general hospitals is not peculiar to Scandinavia It has long been the practice in our naval hospitals without, so far as I know, any untoward results Doubtless it would have been adopted more widely were it not for the fact that local authorities provide for infectious disease and, for the most part, voluntary bodies for other sickness Nevertheless the idea is valuable on the grounds that small isolation hospitals are usually uneconomical and inefficient, and that unduly long journeys are not in the interest of the patient even under modern transport conditions

Lastly current and terminal disinfection There is no doubt that "a good spring cleaning' is all that is necessary in most diseases when the patient has been treated at home throughout his illness, but I suggest that the full ritual is desirable in the case of diphtheria patients removed to hospital while still highly infectious and when any infectious disease occurs in a boarding house or hotel In scarlet fever practice varies Admitting that infection in this disease is mainly *personal* to the sufferer, undetected cases and carriers, there still remains sufficient evidence in the opinion of many to justify full disinfection.

I am, Sir, yours faithfully,
G B PAGE,
Medical Officer of Health Exeter

Public Health Department, Exeter Jan 11th.

NASAL SINUSITIS IN CHILDHOOD

To the Editor of THE LANCET

SIR,—Your leader on this subject draws attention to a common malady but one not very familiar to those in charge of young children and school children, judging from the regular stream of cases referred to hospital for removal of tonsils and adenoids, when the underlying condition is a nasal sinusitis

Complete nasal obstruction in infants and children is most commonly associated with a nasal discharge due to a sinusitis, which is also a fertile cause of a recurrent otitis, chronic cough, and relapsing chest conditions A large mass of adenoids produces only *intermittent* nasal obstruction In my experience the mucoid nasal discharge arises more frequently from the ethmoidal cells than from the antra

Cases of nasal sinusitis may often be recognised by the presence of nodules of lymphoid tissue scattered on the posterior pharyngeal wall, visible below the level of the uvula A blob of mucus depends from the post nasal space, coming into view when the child gags In the presence of these signs, a cure of the nasal symptoms cannot be obtained by removal of tonsils and adenoids The incidence of "clinical" nasal sinusitis is certainly more common than is realised, but percentages are deceptive Anyone interested in the subject—especially if he is known to have some 'new" treatment—soon becomes inundated with cases that are referred from all quarters, with the result that an exaggerated idea is obtained as to its real prevalence

In the last five years at the Queen's Hospital for Children I have made it a routine to wash out the antra in all cases with a nasal discharge I can only recollect some half a dozen cases in which pus was washed out of the antrum (I exclude cases of complications such as orbital cellulitis secondary to an acute pan sinusitis.)

Most of the antra must have contained only watery mucus, or have been empty as the wash-outs were returned clear in spite of the X ray disclosing antra which were completely opaque This opacity must therefore indicate a thickened lining membrane only I have never observed a fluid level in the antra of children On a few occasions in the past, on clinical and radiological grounds I have explored the antrum through the canine fossa and have been disappointed by the small amount of disease disclosed—merely a slight thickening of the mucous lining of the antrum with no fluid visible The discharge must therefore have had its origin in the ethmoidal region

A difficult problem arises in considering the treatment of the chronic cases—and many become so in spite of all types of treatment

All my patients are treated as a routine with a course of nasal lavage and displacement which is performed as follows The child lies down with the head well extended over the edge of the pillow so that a line through the tip of the nose and the auditory meatus is vertical. While the child chants K K continuously a solution of normal saline (with ¼ grain of ephedrine hydrochloride added to ½ pint) is slowly dropped from a rubber bulb syringe into one nostril, while a nozzle attached to a suction apparatus applied to the other nostril draws the fluid away In this way the nasal chambers are thoroughly flushed with the solution and all adherent and tenacious secretions removed The ephedrine shrinks up the nasal mucosa and facilitates drainage from all the sinuses The symptomatic relief is instantaneous and impressive About 4–6 oz of solution is used for each nostril The treatment is repeated 2–3 times weekly for six weeks At the end of each seance 20 c.cm of solution are dropped into the nose slowly One nostril is blocked with the finger while intermittent suction is applied through the other nostril—to displace the solution into the sinuses The child s coöperation is essential I have used this treatment for the last four years and the results on the whole have been gratifying in the acute and subacute cases The chronic cases derive considerable benefit but tend to relapse when the treatment ceases

If the symptoms are not relieved antral lavage is practised under anæsthesia and the nasal displacement repeated subsequently I have been disappointed with the results of antral drainage and only after much consideration do I perform an inferior intranasal antrostomy as I consider many of these cases to be ethmoidal and not antral in origin

I am Sir yours faithfully

London W Jan 7th N ASHERSON

PURIFIED LIVER EXTRACTS

To the Editor of THE LANCET

SIR,—In your issue of Dec 26th last Dr C C Ungley describes the trial in pernicious anæmia of a preparation said to be a "further purification of Dakin and West s liver fraction He states that the further purification has been obtained by applying the process described by us in the *Acta Medica Scandinavica* The method described in his article however as used for this further purification consisted *in applying only* one part of our method to anahæmin the original Dakin and West liver fraction

In terms of the still unisolated anti anæmic pure factor the product examined by Dr Ungley must be a relatively crude one By our method of adsorption on charcoal and selective elution with phenol water and phenol we have consistently prepared direct from liver active material in very high concentration In terms of the total solids present the potency is considerably higher than that of Dr Ungley s preparation We maintain however that a mere statement of the total solid content of a liver extract is in the present state of our knowledge likely to be very misleading in our opinion, writing as chemists it may involve clinicians in serious fallacies

Our investigations indicate that the Dakin and West method leads to inconsistent results and that it also involves a considerable loss of the anti anæmic factor By adsorption on charcoal and selective elution with phenol-solutions we obtained active material at a high concentration we also found that our process gave rise to a product of remarkably constant clinical activity By repeating the process of adsorption and elution followed by other methods of purification not yet published in detail further concentration of the hæmopoietic factor could be obtained This is shown by the fact that we prepared material of such potency that 0·7 mg produced a high reticulocyte response in the hands of Strandell Poulsson, and Schartum Hansen

We wish however to insist that even after this degree of purification we had not obtained the chemically pure factor It is probable that at least two thirds of our richest material consisted of inert matter

At the present time therefore we consider it is undesirable to state the dosage of a parenteral liver extract in terms of total solids since inert substances must constitute a large proportion of the product *unless we push the purification to an advanced and* uneconomical stage If we assume that the amount of pure factor in a dose weighs 0·5 mg (which is likely to be much too high) the statement that 25 mg of solids gave a maximal response shows the dose to contain 98 per cent of inert matter and 2 per cent of the active factor We agree of course that a low total solid content is desirable but not that this gives a standard by which we can estimate dosage We can produce from a given quantity of fresh liver a product of *unvarying* potency with a *very low* total solid content by stopping our process at a given stage but the actual weight of the dose may vary by 50 or even 100 per cent

On the manufacturing scale the proper objective must be to produce in the highest practicable degree of purity an anti anæmic preparation of unvarying potency Dr Lester Smith of the Glaxo Laboratories Greenford England working in conjunction with us has now been able by this method to make such a preparation in which is produced from 100 grammes of fresh liver a fraction having an average weight of about 10 mg The material is dissolved in 2 c cm —i e at a concentration of about 5 mg per c cm. A maximal reticulocyte response occurs after the injection of a quantity of material produced from 100 g or at the most 200 g of fresh liver with a corresponding rise in the red blood corpuscles This product as is clear from its small weight is of a high degree of concentration but it is our earnest hope that the dose will not be stated in terms of its weight At the present time we rely upon the standardised method of manufacture and *the constant potency that has been found clinically* Expression of activity in terms of the weight of original fresh liver has a useful meaning only in such an instance

We understand that clinical trials of this product are being made in England (as well as in this country) and that it will be generally available before long We must apologise for trespassing on your space at such length, but we think it only fair to ourselves and our English collaborators to make it clear that the paper by Dr Ungley, except for the one step in purification described, has little reference to our own published work or to our more recent investigations

We are, Sir, yours faithfully,
PER LALAND,
AAGE KLEM
Oslo Norway, Jan. 6th

CONVALESCENT SERUM IN INFLUENZA

To the Editor of THE LANCET

SIR,—On analogy with other virus diseases, such as measles, it seems reasonable to assume that serum obtained from patients convalescent from influenzal might be of therapeutic benefit The suggestion was, we believe, first put forward by Dr Herbert French in 1919, but has never been practised, at any rate on a large scale The recent researches of Laidlaw on the transmission of influenza to ferrets have shown that these creatures do in fact develop antibodies as the result of an attack This would be a strong point in favour of the use of convalescent serum were it not that after a few months of immunity they become again susceptible, even though antibodies are still in the blood. Possibly, however, protection depends in part upon these substances, and upon their degree of concentration in the body

Our purpose in writing this letter is to ask those medical men who are now dealing with influenzal patients to obtain blood from them when they are convalescent If they will send either the blood or preferably the patient to the Bacteriological Department, Guy's Hospital, a batch of mixed sera will be obtained and treatment of influenzal patients carried out with the usual controls It is hoped in this way to decide whether the serum is of any value and, if so, to aim at the collection of large supplies so that we may at last have some substance of definite therapeutic and prophylactic value to guard the population against future epidemics Will those doctors who are good enough to collaborate in this manner kindly select only those patients in whom the diagnosis of influenza was unquestionable and preferably uncomplicated ?

Blood may be collected into a sterilised vessel by any of the recognised aseptic methods of venepuncture, and the following suggestions for the collection of serum may be helpful —

If apparatus is not to hand, on receipt of a message to Hop 1654 collecting apparatus will be sent to any medical man offering to send blood This will consist of a sterilised needle and rubber connexion fitted to a sterilised 250 c cm screw-capped bottle The skin over an arm vein should be carefully cleaned, the vein distended by pressure higher up the arm and venepuncture performed in the ordinary way, the blood being run directly into the bottle When this is nearly full, the pressure on the arm is released, the needle withdrawn, a pad placed on the site of puncture and the cap screwed on to the bottle The blood should then be sent directly to this department The whole procedure must be as aseptic as possible If the patient is sent to the laboratory for blood collection, a preliminary telephone message would be appreciated

We are, Sir, yours faithfully,
A. H DOUTHWAITE,
F A KNOTT
The Bacteriological Dept Guy's Hospital S.E 1
Jan. 11th

BUFFER ACTION IN GASTRIC DISORDERS

To the Editor of THE LANCET

SIR,—We would like to draw the attention of English colleagues to some observations we have made on the utilisation of buffers in the treatment of gastric disorders [1]

The optimum acidity for peptic digestion ranges from pH 1 5 to about pH 4 0 , below 1 5 the stomach is liable to be attacked by its own contents, and above 4 0 pepsin ceases to act From this it may be supposed that disorders due to irregular acidity of the gastric juice will be relieved by a remedy that maintains a hydrogen ion concentration near the optimum Such a remedy, unlike the acids and alkalis usually employed, should be capable of correcting both excessive acidity and excessive alkalinity This property is possessed by the substances called buffers, which are usually mixtures of at least one salt and one acid The essential features of buffer action will be seen from the following example

An equimolar solution of acetic acid and sodium acetate has a pH of about 5 If we add some hydrochloric acid *part of the sodium acetate is converted into sodium* chloride, liberating acetic acid. The latter dissociates very little, and the number of free hydrogen ions in the mixture—i e , the acidity—is not much increased, despite the addition of the hydrochloric acid If, on the other hand, sodium hydroxide is added instead of HCl it converts some of the acetic acid into acetate, but the remaining acetic acid breaks up into ions until nearly all the hydrogen ions consumed by formation of acetate have been replaced.

In searching for a physiologically harmless buffer with a pH of about 2–3, one of us (F K) devised a mixture of sodium biphosphate (86 parts) and sodium bisulphate (14 parts), and this is now sold under the name of Optacid The buffering capacity of the mixture is far greater against acids than against alkalis , but it is right that this should be so because the contents of the stomach have to pass into the duodenum and be made alkaline for tryptic digestion.

Hitherto almost every chemical treatment of hyperacidity is based on the neutralising action of alkaline—or at most neutral—compounds But complete neutralisation of the contents of the stomach is by no means always desirable, since its effect is inhibition of peptic digestion and often an increased secretion of acid by way of compensation This defect of alkali therapy has often been pointed out. The commonly used bicarbonate of soda, magnesia usta and magnesium carbonate, are extreme representatives of their class, the pH of concentrated solutions varying between 7 and 11 (The insolubility of the magnesium compounds does not prevent suspensions of them from becoming alkaline as a test with phenolphthalein indicator will show) In recognition of this objection the alkalinity of remedies recommended has been gradually reduced. Compounds of alumina and silica with alkali came into use , but though they may do something to protect the wall of the stomach their alkalising effect is much reduced—so much so that the usual doses hardly suffice to weaken superacid gastric juice Greenwald [2] describes a mixture of calcium and magnesium phosphate which was the first remedy to weaken, but not essentially neutralise the gastric acid Even this mixture, however, is in itself neutral, and though it counters acidity it does othing to relieve subacidity Optacid is the first emedy to do both.

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[1] Kőrösy F (1934) *Tech Kurir* 5 Geröb, S , and Kőrösy (1934) *Gyógyászat* 74 146

[2] Greenwald, I (1923) *Proc Soc exp Biol , N Y* 20, 435

The accompanying figure shows the effect of arious quantities of (1) sodium bicarbonate (2) an lum preparation and (3) optacid on the pH of xtremely acid gastric juice (from an ulcer patient) in vitro and illustrates the stability of its action

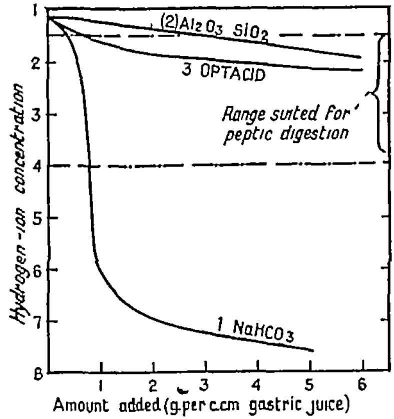

Chart showing changes in the hydrogen ion concentration of strongly acid gastric juice on addition of various quantities of (1) sodium bicarbonate (2) an alum silicate mixture and (3) optacid.

A similar advantage is gained when the juice is obtained from a stomach secreting little acid the high initial pH is quickly lowered to about 3 but no overdose will reduce it further than 1 6 Test-meals have confirmed the presumption that the ambivalent normalising action of optacid would be the same in the stomach as it is in vitro Phosphoric acid does not inhibit peptic digestion[3] the normal dose of optacid was found not to diminish the activity of trypsin in the duodenum[4] It has also been shown[1 4] that the alkali reserve of the blood is only slightly diminished by very large doses (4 grammes) of optacid, and acidosis therefore need not be feared though it is wiser not to try the new remedy in patients already acidotic (e g in severe diabetes or renal disease) Optacid acidifies the urine and the acid reaction prevents the possible formation of phosphate stones

In the treatment of gastric disorders we give optacid in tablets of one gramme or in small granules One gramme is usually taken at breakfast and two at dinner and supper Where there is much superacidity we have thought it prudent to give the medicine during or after meals while for cases with subacidity it is given a few minutes before meals The tablets are broken into a few pieces and taken in water and when more than one tablet is used an interval of ten minutes or so is allowed between them Patients with deficiency of acid usually respond to treatment within a few days but if pepsin also is absent from the juice it will have to be added Really serious affections of the mucosa (e g in pernicious anæmia) are probably outside the range of the new medicine and in very severe gastritis the neutral buffer action of mucin can only be overcome by large doses of optacid. The results with superacidity are equally satisfactory both in ulcer cases and in functional disorders Of 39 patients with peptic ulcer 7 were not benefited however in 2 of those the secretion of acid was normal and we think it likely that normal gastric acidity is sometimes sufficient to excite the damaged mucosa of a stomach, so that in these cases of peptic ulcer it may be good treatment to neutralise the gastric acid completely for a time But for the majority of ulcer patients we prefer our buffer mixture to alkalis Results obtained mainly in the internal department of the Jewish Hospital Budapest, among patients under the care of Dr L Lévy as chief physician may be summarised briefly as follows —

—	Cases examined	Positive effect.	No effect
Inacidity and subacidity	55	45	10
Superacidity	70	60	10
Ulcus ventriculi and duodeni—			
Superacid	39	34	5
Normacid	2	0	2
Inacid	[illegible]	2	0
Heterochylia	7	7	0
Cholecystitis chronica	11	6	5
Colitis chronica	5	0	5
—	191	154 (80 %)	37 (20 %)

For comparison we append those reported by László[4] also using optacid from the II University Medical Clinic in Budapest —

—	Cases examined.	Positive effect.	No effect.
Inacidity and subacidity	40	30	10
Superacidity	14	8	6
Ulcus (superacid)	13	10	3
Chronic cholecystitis	1	0	1
Heterochylia	6	4	[illegible]
—	94	72 (77 %)	22 (23 %)

We conclude that, taking the two hospitals together this remedy has benefited about 80 per cent of the patients to whom it has been given and we hope it will have wider trial.

We are Sir yours faithfully

S GERÖ M D

Budapest. F KŐRÖSY Ph D

LEEDS GENERAL INFIRMARY —This hospital as announced *in our last issue (p 97), has collected the* £250 000 which it requires to carry out its plan of improvements and extensions A pay block and new blocks for housing the nurses are needed; 140 additional beds are also to be provided for the nursing staff and a sick bay and recreation room

FALSE CALLS FOR AMBULANCES —Since Jan 1st any person who gives false information which would reasonably lead to the dispatch of one of the London County Council's ambulances is liable to a penalty up to £25 unless he can show that he had cause to believe that his information was correct This provision has been obtained by the London County Council in its General Powers Act of 1935 in view of the large and growing number of false calls which may have been malicious in origin, received in the last few years by the London Ambulance Service

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Sörensen S P L., and Jürgensen, P (1910) *Biochem Z* 21 131 22 352 Róna P., and Kleinmann H (1924) *Ibid* 150 444

László G (1935) *Orv Hetil* 79 558

PUBLIC HEALTH

VACCINATION IN THE CONTROL OF SMALL-POX

By Duncan Forbes, M.D., D.P.H.
MEDICAL OFFICER OF HEALTH FOR BRIGHTON

There are two types of small-pox: a severe form (variola major) with a mortality of 1 in 5 in unvaccinated persons, and a mild form (variola minor) which is not a killing disease even in the unvaccinated. Both forms breed true. As no Government would dream of enforcing general infant vaccination to control the mild form of the disease, I need only consider the effect of the present Vaccination Acts and regulations upon variola major.

Of first importance is an appreciation of the effect of successful vaccination. If an unvaccinated person, within 48 hours of contact with a case of small-pox, is vaccinated with potent lymph he will not develop small-pox. It is because of this that when a case of small-pox occurs the medical officer of health proceeds to staff his small-pox hospital with nurses, maids and porters irrespective of whether or not they have been vaccinated. What he never fails to do is to vaccinate the whole staff as soon as possible, and always before 48 hours have elapsed from their first contact with the case of small-pox. It is only because the medical officer can put this cordon of recently vaccinated and therefore immune persons around the small-pox patient that successful isolation is made possible.

Whilst there is then no doubt that a small-pox attack is prevented by recent successful vaccination, the number of years the vaccinated person remains immune is variously stated. The length of this period varies with the individual but depends more or less on the method of vaccination. For instance, a vaccination of four marks resulting in half a square inch of scar, as required of public vaccinators in times gone by, will protect with reasonable certainty for some 10 years and usually longer, whilst a one-mark vaccination with a tiny scar, as allowed by the Vaccination Order of 1929, probably protects for a shorter period. The evidence is more definite regarding the effect of vaccination on the severity of attack after immunity has gone. Tables in the annual report of the medical officer of health of Manchester for 1904 show that the severity of attack varies inversely as the number of vaccination marks and their total scar area. They also demonstrate how little protection is afforded by a one mark as compared with a four-mark vaccination, the deaths being in the proportion of four-mark 1, one-mark 5, unvaccinated 9. The figures for scar areas are even more striking—viz., over half a sq. in. 1, under half a sq. in. 10, unvaccinated 19.

Cases of small-pox vary much in their degree of infectivity, but are most infectious in the first few days of the rash. This may be due to the varying extent of the rash on the mucous membranes of the mouth and throat and the incidence of cough leading to rupture of the vesicles and infection by spray. The early infectivity of small-pox is important, as the first cases in a locality may not be diagnosed until the third or fourth day of the rash or later when the vaccination of contacts may fail to prevent secondary cases.

PRESENT METHOD OF CONTROL

When a case of small-pox (variola major) occurs a medical practitioner is almost invariably called in and he either notifies the case as small-pox or calls the attention of the medical officer of health to his suspicion. If the case turns out to be small-pox, within an hour or two of diagnosis, in urban areas where lymph is easily procurable, the home contacts have been vaccinated. Contacts further afield are offered vaccination as soon as possible. The offer of vaccination at the time that contacts are first told of the risk of infection is important, as when offered at once there is a higher acceptance rate; further it leads to a greater proportion of contacts being vaccinated within 48 hours of infection and any attack prevented with certainty. The next step is for the medical officer of health to let all general practitioners in the district know that a case (or cases) of small-pox has occurred and to express his willingness and even anxiety to see any doubtful rashes. This ensures that no cases are overlooked if a doctor is called in.

After the diagnosis of the case and its isolation the most important of all measures for the prevention of spread is the ascertainment of every person who has been in contact with the patient between onset and removal. By careful and repeated inquiries from the patient and his relatives a list of contacts is made out and these are visited daily about the time they are likely to develop the disease. In this way their isolation, should they develop the disease, is ensured practically from the onset. If the supervision of contacts can be, and is, efficiently carried out the small-pox outbreak is quickly brought under control. There are in fact only three ways in which it may escape immediate suppression.

(1) When the attack is so mild that a practitioner is not called in. This happens most frequently in the mild type of small-pox and makes such outbreaks much more difficult to control, especially as there is at times intentional concealment to escape removal to hospital and to prevent loss of time at work. Although mild cases of variola major also occur due usually to the effect of earlier vaccination and at times to natural resistance to attack, in all but exceptional cases a doctor is called in.

(2) When a practitioner is called in but fails to diagnose the disease and does not think it suspicious enough to report to the medical officer of health; this is the more likely to occur nowadays as many young practitioners have never seen a case of the disease. Under such circumstances a crop of cases may occur before the medical officer hears of the first case, but even then once the presence of small-pox is discovered its spread is quickly controlled.

(3) If the primary case is a tramp or person with no fixed abode, associating with like persons, the contacts cannot be efficiently supervised. Even if a tramp is known to have been in contact with a case of small-pox he cannot be compelled to accept vaccination, to have his movements controlled, or to state his place of destination. Thus the disease may spread via common lodging-houses and casual wards to the general public and be difficult to control.

HISTORY OF INFANT VACCINATION

Although vaccination was made compulsory in 1853 it was not until after the passing of the Acts of 1867 and 1871 that a high percentage of infant vaccination was obtained. Thereafter, for a time, as many as 95 per cent. of infants were vaccinated, but even so it took many years before any large percentage of the population had been vaccinated. In those times when epidemics were frequent compulsory vaccination was fully justified and was followed by a fall in the incidence of the disease amongst children and adolescents and later by a fall in case-mortality Considering the less efficient training and small number of health staffs at that time the continued occurrence of epidemics is not a matter for surprise If however it had then been realised that vaccination protects from attack for a limited period only and if revaccination at school leaving age and again in later life had also been made compulsory small pox could have been controlled by vaccination alone The compulsory system might indeed have been extended had it not been for the success attending the discovery immediate vaccination and supervision of all contacts The work of medical officers of health showed that by these means they could easily have stopped outbreaks in their areas if they had been given power to control the movements of tramps *and other migratory persons who were known to* have been in contact with small pox.

Under the circumstances related, a business man would have openly dropped *compulsory* vaccination altogether he would have given the medical officer of health power to control the movements of migratory contacts and would have relied upon intensive action by the health staff to prevent spread of the disease Instead of this compulsory vaccination was really dropped in 1907 but it was stilled called compulsory and the old cumbersome and expensive methods were retained Thus whilst the provisions of the Act of 1898 required that objectors had to *satisfy* two justices or a stipendiary magistrate that he conscientiously believed that vaccination would be prejudicial to his child's health, the Act of 1907 *only required the parent to make a statutory declaration* of conscientious objection before a magistrate Since 1907 vaccinations as a percentage of births have fallen from 71 to 30 and are still falling Not only so but in 1929 the central authority taking unnecessary fright at the possibility of post-vaccinal encephalitis occurring in infants under 6 months of age recommended a one-mark vaccination by the public vaccinator in place of a four mark vaccination In these ways the Vaccination Acts have been rendered useless first by the reduction of the percentage vaccinated but mainly by the introduction of inefficient vaccination

FUTILITY OF THE PRESENT SYSTEM

For years the futility of the present procedure has been recognised and in 1932 the Law Committee of the *Association of Municipal Corporations* considered a letter from the Ministry of Health asking them for any proposals they desired to make in the light of two years experience of the new regulations for facilitating the general acceptance of vaccination and preventing the spread of small pox They conferred with the Society of Medical Officers of Health and agreed with the recommendation of the latter body that *compulsory* vaccination should be abolished but that facilities should still be provided for vaccination and revaccination against small pox on a voluntary *basis*

In 1934 the British Medical Association set up a committee to consider how best to inform the public of the protection afforded by various methods of immunisation including vaccination Their report supported general vaccination and revaccination as important in the prevention of epidemics of small pox but added[1]:

> "It seems likely that the retention on the Statute Book [of the Vaccination Acts at present in force] will soon serve no practicable purpose In so far as they foster antagonism to vaccination they hinder the acceptance of other forms of immunisation

Although all these expressions of opinion must be well known to the Ministry of Health it must be difficult for them to take action unless such action is demanded by public opinion To help to create this it would be well that the public and particularly parents and magistrates should be informed of the following facts

The public health service is well able to control outbreaks of virulent small pox apart altogether from *routine vaccination of infants provided that full* powers are given to them to supervise migratory small pox contacts

The chance of anyone being infected with virulent small pox in this country is very remote (1 in 50 000 in my area in the last 25 years) At the same time the parents should bear in mind that if the unvaccinated are infected by virulent small pox 1 in 5 dies that the face is greatly disfigured by pock marks and that efficient vaccination is in the nature of an *insurance against such a risk*

As the present one mark vaccination is of relatively small value parents must ask for two to four marks with a resulting half sq in scar area

The cost of the present system should be estimated and compared with that of a voluntary system from which all unnecessary records are dropped and vaccination carried out at a municipal centre where similar work for immunisation against diphtheria is undertaken The wastefulness of the present system compared with its small value in both time and *money could thus be made apparent and with* public opinion in favour of new legislation I have little doubt that at no distant date the present Acts would be repealed a purely voluntary system introduced and greater powers given to medical officers of health to keep migratory contacts under supervision.

INFLUENZA

THE number of deaths from influenza reported from the Great Towns in the week ending Jan 9th 1937 was 768—a figure for which the recent trend of the outbreak had prepared us

We reproduce this week a graph showing the deaths from influenza during the winters of 1932–33 and 1935–36 with the corresponding graph for 1936–37 so far as the figures are at present available (The data from which the graph is drawn are *given at the foot*) As the weeks do not strictly correspond in the three years we have plotted the deaths against the last day of the week to which they relate in each year It should be borne *in mind* that the graph relates only to deaths and not to attacks and there is evidence from all parts of the country that the disease is still taking a mild form with the normal age-distribution and no emphasis on young adults as in the pandemic of 1918 The line for 1937 runs so far closely parallel to that for 1933

Of the 768 deaths from influenza reported in the week ended Jan 9th 1937 558 were in the south eastern area (including London) 98 in the Midlands 87 in the north, 18 in Wales 5 in the south west and 2 in the eastern counties

Of the [illegible] deaths from influenza reported in the week ended Jan. 2nd 1937 128 occurred in London and 232 in Greater London The numbers in the Outer Ring were in diminishing order: Willesden 12; Ealing 9

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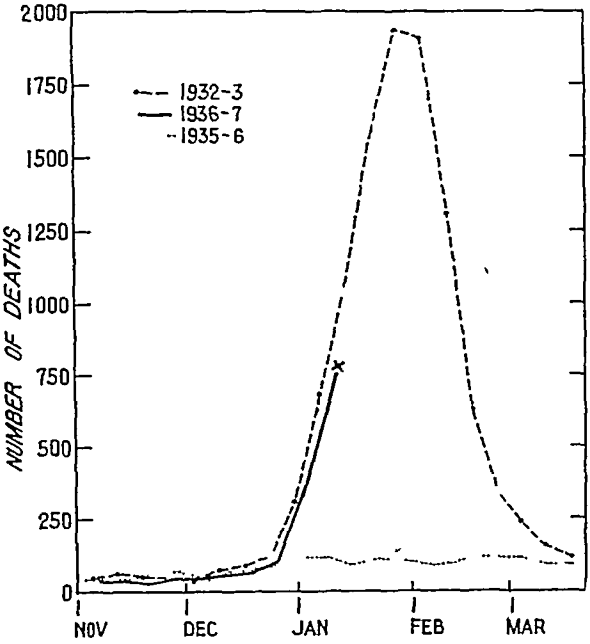
[1] *Brit. med. J.* 1935 1 192 (Supp.)

Hendon, 7, West Ham, 6 Walthamstow, 5, Acton and Hornsey, each 4, Brentford, 3, East Ham, Harrow, Leyton, Southgate, and Wembley, each 2, Barking, Beckenham, Enfield, Mitcham, Wimbledon, and Wood Green, each 1 Outside London the number of deaths in diminishing order was as follows Bristol, 17, Bradford, 10, Leeds, 9, Birmingham, 8, Northampton, 7, Nottingham, 6, Leicester, 5, Manchester, Cardiff, and Rhondda, each 4, Reading, Southend on Sea, and Liverpool, each 3, Brighton, Canterbury, Hove, Sunderland, Derby, Ipswich, and Swansea, each 2

It is perhaps worth pointing out that the abruptness of the increase in the week ending Jan 2nd was attributable in part to imperfect returns in the previous week, which included two holidays A study of the comparative table of total annual death rates in various great towns confirms this surmise From this it appears that the death rate in the 122 great towns taken together increased from 10 8 to 17·0 but as the figures for the two previous December weeks were 12 4 (Dec 12th) and 13 3 (Dec 19th) it seems not unlikely that the actual rise in the death rate between Dec 26th and Jan. 2nd is nearer 2 than 5 Applying the same adjustment to the other figures in the same table, it is clear that while there has been a sharp rise in London and Bristol, and a less but still material rise in Bradford, Liverpool, and Nottingham, the increase in the death-rate at such places as Birmingham, Manchester, and Newcastle-on Tyne may be more apparent than real.



Graph showing total deaths from influenza in the Great Towns on the last day of each week in three different years.

Deaths from Influenza in the Great Towns

Week ending	Deaths	Week ending	Deaths	Week ending	Deaths
1932		1935		1936	
Dec 3rd	33	Nov 30th	58	Nov 28th	44
,, 10th	68	Dec 7th	45	Dec 5th	43
,, 17th	85	,, 14th	62	,, 12th	54
,, 24th	120	,, 21st	67	,, 19th	57
,, 31st	303	,, 28th	80	,, 26th	97
1933		1936		1937	
Jan 7th	680	Jan 4th	110	Jan 2nd	325
,, 14th	1039	,, 11th	110	,, 9th	768
,, 21st	1588	,, 18th	89	,, 16th	
,, 28th	1933	,, 25th	104	,, 23rd	
Feb 4th	1909	Feb 1st	98	,, 30th	
,, 11th	1306	,, 8th	85	Feb 6th	
,, 18th	630	,, 15th	97	,, 13th	
,, 25th	344	,, 22nd	119	,, 20th	
Mar 4th	242	,, 29th	107	,, 27th	
,, 11th	157	Mar 7th	112	Mar 6th	
,, 18th	119	,, 14th	84	,, 13th	
,, 25th	65	,, 21st	86	,, 20th	

THE SITUATION IN LONDON

The number of beds allocated to influenza in the L C C fever hospitals is now 700 On Saturday, Jan 9th, there were over 1600 cases in the general hospitals and 513 in the fevers This is an increase over the previous week, but from the returns of admissions it does not appear that the demand for hospitalisation is increasing The number of patients remaining under treatment will of course continue to increase until the discharges are greater than the admissions The Registrar-General's figures for the week ending Jan 9th show 311 deaths certified as due to influenza in London compared to 128 in the preceding week Notifications of acute primary or influenzal pneumonia were 408 in the week ending the 9th, compared with 290 in the previous week. The clinical picture remains much the same, there is no evidence that pneumonia is occurring with more than average frequency or manifesting the dreaded toxic attributes of the 1918 pandemic A considerable degree of prostration and depression seems to persist for some days after the temperature has fallen to normal. Many of the L C C nursing staff are still incapacitated

NEWS FROM THE COUNTRY

The information given last week has been substantially confirmed since, except that Nottingham and its neighbour Loughborough seem now to have suffered as severely as any places outside London. In Birmingham the disease though widespread has remained mild Bradford is reported to have suffered most among the Yorkshire towns, transport drivers and other officials having been down in large numbers but as elsewhere attacks were of minor severity and short duration In Leeds also the public utility services have been much inconvenienced Around Newcastle-on Tyne there has been a slight increase in febrile illnesses but nothing which can be called an epidemic, while the outbreak of nausea and vomiting has definitely subsided, deaths from pneumonia are not above the average for the time of year At Brighton the epidemic is still active but not increasing, as time goes on there are more relapses, the depression however if severe does not last long Here as elsewhere the few cases of sequential pneumonia have not been severe or toxic

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ACUTE POLIOMYELITIS

THE Ministry of Health has issued a revised memorandum (166/Med 2*d*), the text of which follows closely that of the original, published in 1932, but differs in important particulars which reflect the growth of our knowledge of poliomyelitis during the past four years Since the first memorandum was published America and Australia have added most to our knowledge of the epidemiology of poliomyelitis and England the least, for the satisfying reason that the disease is less frequent in Britain than in any other part of the civilised world The memorandum states "There is no sufficient reason to believe that the virus of poliomyelitis is conveyed to man by foodstuffs or insects, or that the disease is associated with insanitary conditions" These words are identical in both issues, but whereas in 1932 there was proof that the virus is conveyed in these ways in 1936 there is strong evidence that it is not Differences in the paragraphs on epidemiology and pathology are due to the Ministry accepting the conclusion of the neurologists that poliomyelitis is primarily an infection of the neurons directly through the filaments of the olfactory nerves Formerly it was believed that the course of the disease was nasal catarrh septicæmia invasion of meninges and lastly implication of the neurons—and that the disease could stop at any of these stages In other words that poliomyelitis is an acute fever which may or may not have infantile paralysis as a complication. The new view is that poliomyelitis is a direct infection *of the neurons which may or may not lead to* permanent paralysis, but there is no disease without implication of the neurons It is well to keep open the question whether man may react otherwise than by poliomyelitis to the virus, but it may be accepted that unless the neurons are implicated at the start they never will be The memorandum mentions that the cephalic form (polio-encephalitis) usually ends in death or complete recovery though it does not always do so The paragraph on treatment in the new memorandum differs from that in the old more in tone than in words owing to the fact that in 1932 convalescent serum gave great promise whereas, unfortunately in 1936 hope of serum treatment had fallen almost to zero 'The after-effects of poliomyelitis are of so grave a nature that in spite of these findings some medical practitioners may still desire to use serum This is not encouraging but it may be the best that can be said with truth. There is no material alteration in the paragraphs on precautions against infection and on the action by the medical officer of health It is doubtful whether any of the precautions is of much avail. Since in epidemic centres passive carriers are vastly more numerous than cases or known contacts isolation does not *promise much* but the evidence from Queensland that contacts are mainly responsible for the spread of the disease is not to be ignored. It has been questioned whether actual sufferers can spread the disease after symptoms have developed The late James Collier held that they could not We are told

Neither serum nor specific vaccines can be recommended for individual protection While we do not cavil at this statement in 1936 we may well hope that the future will give us a vaccine which is both trustworthy and free from danger

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JAN 2ND 1937

Notifications—The following cases of infectious disease were notified during the week: Small pox 0; scarlet fever 1933; diphtheria, 1353; enteric fever 18; pneumonia (primary or influenzal) 1612 puerperal fever 40 puerperal pyrexia 150 cerebrospinal fever 33; acute poliomyelitis, 2; encephalitis lethargica, 3; continued fever 1 (Brighton); dysentery 10; ophthalmia neonatorum, 71 No case of cholera plague or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Jan 8th 1937 was 2805 which included: Scarlet fever 953 diphtheria 1011 measles 15; whooping cough, 496 puerperal fever 14 mothers (plus 8 babies) encephalitis lethargica 285; poliomyelitis, 4 At St Margaret's Hospital there were 13 babies (plus 6 mothers) with ophthalmia neonatorum

Deaths—In 122 great towns including London there was no death from small pox 1 (1) from enteric fever 7 (0) from measles, 0 (0) from scarlet fever, 28 (7) from whooping-cough 41 (5) from diphtheria, 52 (17) from diarrhœa and enteritis under two years and 825 (128) from influenza. The figures in parentheses *are those for London itself*

Nottingham had 3 deaths from whooping-cough Fatal cases of diphtheria were reported from 33 great towns Liverpool and Birmingham each 4

The number of stillbirths notified during the week was 302 (corresponding to a rate of 44 per 1000 total births) including 44 in London.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Comdr G Kirker to *Pembroke* for R N.B

Surg Lt -Comdr C Ommanney Davis retires at own request

Surg Lt (D) F J Goldsworthy promoted to rank of Surg Lt -Comdr (D)

C E Fitton H W Gibbs and R A. Hilton to be Surg Lts (D)

Surg Lt C J Mullen to *Drake* for R.N.B

Surg Lt D Ewart transferred to Emergency List

The following have received appointment as Surg Lts for Short Service: W Boyd (Glasgow Univ) F A Crosfill (Leeds Univ) G C Denny (Guy's Hosp) F P Ellis (Manchester Univ and Charing Cross Hosp) R Vaughan Jones (Birmingham Univ) W Sloan Miller (Glasgow Univ) L. R Norsworthy (St Bartholomew's Hosp) B O Neill (Cork Univ Coll) G R Rhodes (Manchester Univ) and P G Stainton (Guy's Hosp); and appointed to R N Hosp Haslar for course

G H C R Crition entered as Surg Lt for short service

ROYAL NAVAL VOLUNTEER RESERVE

Surg Lts W S Miller and R V Jones, commissions terminated on transfer to R.N

ROYAL ARMY MEDICAL CORPS

Maj -Gen H Ensor CB CMG CBE D.SO ret pay (late R.A.M C) is apptd. Col. Comdt vice Maj -Gen O L Robinson C.B C.M.G ret pay (late R.A.M.C) who has attained the age limit for his appt

Capt T F M Woods to be Maj

TERRITORIAL ARMY

Supernumerary for service with the O T C Lt.-Col. J du P Langrishe D S O (Lt -Col Res. of Off) resigns his commn. in the T.A

ROYAL AIR FORCE

Wing Comdr R H Stanbridge to Princess Mary's R.A.F Hospital, Halton for duty as medical officer

Flight Lts I A Cooper to No 31 (Army Coöperation) Squadron, Karachi India; C M Fraser and J F McGovern to Central Medical Establishment London; and W P Stamm to R.A.F Station, Abbotsinch

Dental Branch—Flight Lt J E. Tyrrell to R.A.F Station Calafrana Malta

Flight Lt P J Clifford Keane is transferred to the Reserve class D

INDIAN MEDICAL SERVICE

Majs to be Lt Cols: L. G Pearson and P M Antia.

The undermentioned appts. are made:—

To be Capt (on prob): A H O'Malley

To be Lts. (on prob): A M McGavin J D O'Shaughnessy J F O Donnell and D R. Cattanach.

The undermentioned appt has been made in India:—

D.A.D.M.S.: Bt Lt -Col. A. H Craig I.M.S

The undermentioned officers have vacated appts in India:—

D.A.D P: Lt -Col A C Craighead I.M S

D.A.D.M.S: Lt -Col. C A. Wood M.C I.M.S.

FOR AMATEUR ACTORS AND PRODUCERS—A practical course of acting play production, and stagecraft will be held at the Everyman Theatre Hampstead on Sunday afternoons, Feb 7th 21st 28th and March 14th 21st and 28th. During April and May a series of public performances will be given by members of the course Further particulars may be found in our advertisement columns.

OBITUARY

SIR DAVID SEMPLE, M D R U I

LATE DIRECTOR OF THE PASTEUR INSTITUTE INDIA

THE death occurred on Thursday, Jan. 7th, in St Mary's Hospital of Sir David Semple, who will always be remembered in association with antirabies therapeutics, and whose general contributions to tropical medicine were of the first order

David Semple was the second son of the late William Semple of Castlederg, Co Tyrone He was born in 1856 and received his early education at Foyle College, Londonderry, and Queen's College, Belfast He graduated as M.D , M Ch R U I with honours in 1881, and entered almost immediately the Royal Army Medical Corps He served with the Corps for some five years, leading an active regimental life, with polo as a particular interest But in 1893 he went to Cambridge and occupied his leave by studying bacteriology under Sims Woodhead. He then began his association with Sir Almroth Wright, under whom his later bacteriological work was done, and when Sir David Bruce left for S Africa to carry out his brilliant studies of the tsetse fly, Semple was selected by Wright as Bruce's successor to be assistant professor at Netley He proved a good teacher, while he collaborated closely with Wright in the early work on typhoid inoculation and on Malta fever, during which latter investigation both the researchers contrived to infect themselves At Netley Semple gained his early insight into Pasteur's antirabic work, for at this time Pasteur's methods were a regular subject of demonstration to the students at the Army Medical School When his appointment at Netley was up he went to Paris and studied the antirabic treatment at the Pasteur centre so that on proceeding to India in 1899 he was especially well equipped for the important opening which now came to him

SIR DAVID SEMPLE

[Photograph by Elliott & Fry

We owe to Sir Rickard Christophers the following full summary of Sir David Semple's work in India

"Though it is now more than twenty years since Sir David Semple retired from active work in India his name will be fresh in the minds of a great many who knew him personally and an even greater number who know him by reputation Few in the medical services in India have ever been so well and widely known, personally and by reputation He was the father of antirabic treatment in India and came to be regarded almost as a seer by many thousands of Indians and hundreds of Europeans who in the course of years have travelled to Kasauli to receive antirabic treatment or advice But this is not the only reason why Sir David Semple's name was well known Coming to India at a time when there was practically no organisation for medical research in that country and no such thing as courses of instruction as at present in schools of tropical medicine at home Sir David Semple as teacher and organiser for many years represented all that was most modern and progressive in scientific medicine and an inspiration not only to those of his own service in India but even more so perhaps to many young Indian Medical Service officers with whose work his own became increasingly associated He was definitely the founder of the two institutes at Kasauli, the Pasteur Institute of India and the Central Research Institute and as such played a very considerable part in the eventual development of medical research in India, since from both these institutes have come many of the future directors of the now numerous laboratories, and Pasteur institutes that have since arisen in various parts of India

"There can be little doubt that Sir David Semple's success in India was in considerable part at least due to the time he had spent before arriving in that country as assistant professor of pathology at Netley with Sir Almroth Wright, and to his work under Pasteur at Paris Trained in such an environment he came equipped not only with a sound knowledge of bacteriology and bacteriological and serological technique but also imbued with the spirit of a new revival in medical research which had begun to be evident at this time Very probably, the present writer thinks, Semple must have been sent to Paris with the definite object of enabling him to put into concrete form a scheme for a Pasteur institute in India which had already been some time under consideration, and in which Sir Almroth's advice had at some previous time been asked. Whether this be so or not, David Semple in 1899 came out to India equipped as few before him had been to take charge of activities in a virgin field On April 9th, 1900, the Pasteur Institute of India was opened with Sir David Semple (then Major Semple) as director In the first year some three hundred patients were treated. It is impossible to read the early annual reports of this new institute, the first of its kind in the British Empire, without being deeply impressed not only with the energy and initiative displayed by its founder, but also by the enlightened spirit which evidently actuated him in all the work done Looking back one sees even in the early years of the Institute's existence the original birth of activities which have since grown but which are still much as started by Semple The production and issue of antivenine—a serum prepared against cobra bite, and later including also protective properties against the dreaded Daboia or Russell's viper—had already been started even as early as 1903 A serum against rabies (as distinct from a protective vaccine), now used in certain cases, had already been prepared and tried. Antityphoid vaccine and even diphtheria and tetanus serum were likewise prepared and the use of the laboratory for diagnostic purposes to assist R.A M.C and I.M.S officers and private practitioners was already in 190 recognised An entirely new type of institute, such as is now familiar enough, had thus been created for the first time in India and probably for the first time in any tropical British Possession.

"Schemes for more effective laboratories in India had however for some time been receiving increased attention and under the régime of Lieut. Colonel Leslie, Sanitary Commissioner with the Government of India, there was brought about the formation of a bacteriological department with recognised laboratories for the Central and Provincial Governments and a fixed bacteriological cadre much as has since existed In this scheme Semple became the first director of the Central Government s laboratory the Central Research Institute at Kasauli It was again due to Semple s personal energy and capacity for organisation that this institute came into being and continued to function not only as a centre for research but one from which a spirit has been infused that has had a great directive influence on the future development of medical research in India

‘During his time as director of this new institute Sir David Semple made some important contributions to medical science Among such may be mentioned the results of an inquiry into the methods by which enteric fever was contracted in the British Army in India results which greatly modified the existing outlook on the causes of this disease among troops and the steps to be taken to prevent it Perhaps the research of greatest practical importance was that which dealt with the protective properties of carbolised dead vaccine in rabies He showed that such vaccine could be used with effect in place of the living virus which was the basis both for the dried cord method and the dilution method then in use Adoption of this form of the antirabic treatment has completely modified previous ideas as to the necessity of the patient travelling long distances to be treated in a hill station, and has allowed of the present method of distribution of the vaccine to numerous inoculation centres in the plains

It is not however as the pure research worker that Semple was chiefly known but rather in the rôle of inspired organiser and teacher As the former he built well and laid an enduring basis on which others have since extended the work As a teacher his power lay in a great faculty amounting to genius for simple demonstration He had the one prime necessity for the good teacher that he never forgot that those being taught did not start with all the knowledge he himself possessed To those who knew him in private life and to those about him in the laboratory he was a staunch and kindly friend and his memory will long remain in Kasauli where he spent so many years of his life

Sir David Semple was knighted in 1911 and retired from service in India in 1913 being appointed director general of the Public Health Department in Egypt He served in Egypt throughout the war with the rank of Colonel A.M S and received the Order of the Nile He married Ethel May daughter of Dr Edward Watson of Isleham Cambs and was the father of seven children of whom three daughters survive Of four sons two were killed in the war and two died in youth

THE LATE SIR GRAFTON ELLIOT SMITH

Dr A J E Cave assistant conservator of the museum of the Royal College of Surgeons of England writes The outstanding achievements of the late Sir Grafton Elliot Smith in the field of cultural anthropology may be less familiar to his medical brethren than are his pioneer investigations into mammalian cerebral anatomy or his important contributions to the physical anthropology of primitive and of fossil man Yet his influence in this particular field (one of increasing social and politico economic importance) has been as profound as that of a Darwin or a Huxley in realms biological indeed no more may the modern ethnologist neglect a thoughtful recognition of Elliot Smith s doctrine of the diffusion of culture than the present-day biologist may dispense with some scheme at least of organic evolution

The potent influence which Elliot Smith was later to exert had its seeds in his chance occupancy of the Cairo chair of anatomy which brought him into close and sympathetic coöperation with the foremost Egyptian archæologists of his day (Maspero Junker Reisner Mace Quibell Theodore M Davis and others) and gave him an unrivalled acquaintance with Egyptian cultural elements of all periods of that country's history His anatomical skill was sought increasingly in the description and recording of extensive series of human remains (cf. his contributions to the *Bulletins* of the Archæological Survey of Nubia) and in the examination of many historic and other mummies the volume on The Royal Mummies of the Cairo Museum Catalogue being from his pen. His numerous memoirs on mummification (continued in after years) not only gave us the first truly scientific and comprehensive analysis of this curiously distinctive practice but also focused their author s attention sharply upon a ritual which he recognised as constituting the central nucleus of the whole of ancient Egyptian civilisation Elliot Smith intuitively perceived in the practice of mummification one of the master themes of cultural anthropology a theme which he expanded and elaborated in later years to most fruitful purpose It was originally from the mere geographical distribution past and present, of this peculiar and difficult practice that he demonstrated (1915) The Migrations of Early Culture a classic of ethnological accomplishment

He sought increasingly with his colleague Dr W J Perry and the disciples they gathered about them corroborative evidence of the actual spread of cultural elements and customs from one original home and whilst such evidence accumulated he proclaimed, with characteristic fullness and vigour his provocative ethnological doctrine of the diffusion of culture Tremendous even bitter was the opposition to this novel teaching and the echoes of conflict are still about our ears. But in the main the old fallacy of a basic psychic unity underlying human activities and reactions was exploded and the gist of later anthropological investigation has been a confirmation of the truth and reality of the main tenets at least of the diffusionist gospel and of Elliot Smith s penetrating conception regarding the fundamental uniformity of early civilisations The whole face of ethnological study has been renewed and a new and vivifying spirit infused therein.

It is to Elliot Smith s lasting credit that he first with an intuition transcending the merely anatomical, perceived in Ancient Egypt the essential threads of primitive culture and civilisation and out of them wove on the loom of his genius the tapestry of human history

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Congress of Fever Therapy—As announced in our issue of Dec 26th, the first International Congress of Pyretotherapy will be held at Columbia University New York on March 29th 30th, and 31st We are informed that Dr Germain Blechmann 30 avenue de Messine Paris VIII is drawing up a report on pyretotherapy in pædiatrics and asks that all interested should send him their publications on the subject and a résumé of communications they would like to put before the congress. The British secretary for the congress is Dr W Kerr Russell 146 Harley-street London W 1 and the secretary-general Dr William Bierman 471 Park avenue New York.

MEDICAL NEWS

University of London

On Tuesday, Jan 19th, Prof J C Drummond will give the first of six weekly lectures on problems of nutrition, and on Monday, Jan 25th, Mr H R Ing, D Phil., will give the first of six lectures on *chemical structure and pharmacological action* These lectures will all be held at 5 P M at University College, Gower street, W C Five Heath Clark lectures *on the development of bacteriology with some account of the pioneers who have made it a science* will be given at the London School of Hygiene, Keppel street, W C, on Jan 25th, 28th, and Feb 1st, 4th, and 8th, at 8 P M, by Dr William Bulloch, F R S, emeritus professor of bacteriology in the University On Tuesdays, Feb 9th, 16th, and 23rd, at St Mary's Hospital medical school, at 5 30 P M., Mr E D Telford, emeritus professor of systematic surgery in the University of Manchester, will lecture on some disorders of the peripheral circulation They are open to all interested in the subjects

The following have been recognised as university teachers at the schools indicated Mr J P Hosford, Dr James Maxwell, and Dr A W Spence (St Bart 's), Dr J D Benjafield, Mr Ralph Marnham, and Mr T F McNair Scott (St George's), Mrs Joan Taylor (Royal Free), Mr B W Fickling and Mr D G Walker (London School of Dental Surgery), Mr Percival Hartley, D Sc, and Sir Patrick Laidlaw (National Institute for Medical Research)

At recent examinations the following candidates were successful —

M D

Branch I (Medicine) —J A Brocklebank, Guy s Hosp A M R Cann Middlesex Hosp E A Danino, St Bart. s Hosp C J Gavey London Hosp N M Green, Univ Coll Hosp R R Henderson, A L P Jeffery and Evan Jones St Thomas s Hosp E I Jones, King s Coll Hosp, F A Jones, St Bart. s Hosp A L Light Univ of Leeds G A. M Lintott, Guy s Hosp Mary F Lockett, Roy Free Hosp Brian McArdle Guy s Hosp, D C Reavell St. Bart 's Hosp, A. M Stewart Wallace Univ Coll Hosp, and J B L Tombleson, St. Thomas s Hosp

Branch II (Pathology) —G J Cunningham and A H T Robb Smith (university medal) St. Bart s Hosp

Branch III (Psychological Medicine) —A. C Dalzell (university medal) King s Coll Hosp

Branch IV (Midwifery and Diseases of Women) —Agnes V Kelynack, Roy Free Hosp L W Lauste St Thomas s Hosp G G Macdonald Univ Coll Hosp Marjorie E Roberts Roy Free Hosp, J W Schabort Guy s Hosp and Postgraduate Medical School, and Violet H Whapham, Roy Free Hosp

Branch V (Hygiene) —Karl Biden Steele, Guy s Hosp

Royal Faculty of Physicians and Surgeons of Glasgow

At a meeting of the faculty held on Jan 4th, with Prof Archibald Young, the president in the chair, the following were admitted to the fellowship —

Jacques Simon Cramer (Fiji) Rustom Ardeshir Davar (London) Alexander Hutchison and Agnes Thomson Kennie (Glasgow), Sydney Mander Laird (Kilmacolm) Patrick Joseph Molloy (Glasgow), Benoy Bhusan Mukerjee and Charu Chandra Saha (London) and Tanjore Somosundara Subramaniam (Liverpool)

International Surgical Congress

The next congress of the International Surgical Society is to be held in Vienna in 1938, and arrangements are now being made The subjects of discussion will be the surgical treatment of arterial hypertension bone grafts and the surgical treatment of cysts and pulmonary tumours Members of the society who would like to take part are asked to communicate with Prof Grey Turner at the British Postgraduate Medical School, Ducane road, London, W 12

Conference on the Accredited Milk Scheme

On Jan 28th as already announced the Royal Sanitary Institute is holding a discussion on the administration of the Milk (Special Designations) Order, 1936 with respect to accredited milk A large attendance is expected and it has therefore been decided to transfer the meeting from the house of the institute to the Central Hall, Westminster It begins at 2 P M Mr Thomas Baxter, chairman of the Milk Marketing Board will preside, and Dr W G Savage, medical officer of health for Somerset, will open the discussion

THE American Congress of Physical Therapy has awarded to Dr Stefan Jellinek, professor of electropathology in the University of Vienna, its gold key for distinguished service, and has elected him an honorary life member A note describing Prof Jellinek's museum of electropathology was published in our issue of Nov 14th, 1936, p 1195

Research in Encephalitis

The foundation of the advancement of encephalitis research, at the University of Berne, offers prizes to workers in that field Particulars will be found in our advertisement columns.

Hunterian Society

The Hunterian lecture of this society will be delivered at the Mansion House, London, at 9 P M on Monday Jan 18th, by Dr J Schoemaker of The Hague He will speak on the surgery of gastro-duodenal inflammation.

Royal Microscopical Society

The annual meeting of this society will be held at B M.A House, Tavistock square, London, W C, on Wednesday, Jan. 20th, at 5 30 P M, when Mr R S Clay, D Sc, will deliver a presidential address on the mechanical development of the microscope

A Hospitals Emblem

Hospitals Week in London and Greater London is timed for May 2nd–8th, immediately before the Coronation Over 80 hospitals are uniting in a combined attempt to raise funds, and this will take the place of the flag days previously scattered throughout the year The committee organising Hospitals Week, whose chairman is Lord Luke, is in search of an emblem that can be made as familiar to the public as the red cross and the Flanders poppy Suggestions may be addressed to the hon. secretary, Hospitals Week, 36, Kingsway, London, W C 2 but no prizes are offered

B M A Scholarships and Grants in Aid of Research

The Council of the British Medical Association is prepared to receive applications for research scholarships and grants for assistance of research in connexion with disease

Scholarships —An Ernest Hart memorial scholarship, of the value of £200 per annum a Walter Dixon scholarship value £200 per annum and three research scholarships each of the value of £150 per annum These scholarships are given to candidates whom the Science Committee of the Association recommends as qualified to undertake research in any subject relating to the causation prevention or treatment of disease Preference will be given other things being equal to members of the medical profession Each scholarship is tenable for one year commencing on Oct 1st 1937 A scholar may be reappointed for not more than two additional terms and is not necessarily required to devote whole time to the work of research but may hold a junior appointment at a university, medical school or hospital provided the duties of such appointment do not interfere with the work as a scholar

Grants —Grants for the assistance of research into the causation treatment or prevention of disease will be made Preference will be given other things being equal to members of the medical profession and to applicants who propose as subjects of investigation problems directly related to practical medicine

Applications for scholarships and grants must be made not later than Saturday May 8th 1937, on the prescribed form, a copy of which will be supplied on application to the medical secretary of the Association, B.M A House, Tavistock square, London W C 1 Applicants are required to furnish the names of three referees who are competent to speak as to their capacity for the research contemplated

The Council will also consider the award of the Katherine Bishop Harman prize for the year 1938 The purpose of the prize the value of which is £75, is the encouragement of study and research in connexion with risks of pregnancy and childbearing, and the competitor, who may be any registered medical practitioner, is left free to select the work to be presented, provided it comes within the indicated terms The essay must be typewritten or printed in the English language, distinguished by a motto and accompanied by a sealed envelope bearing the same motto and enclosing the candidate s name and address

Selly Oak Hospital

Birmingham city council have approved large extensions to this hospital which will cost over £250 000

A Woman Police Surgeon

It is announced that Dr Eleanor Margaret Reece has been appointed a divisional police surgeon to the Metropolitan Police Force This is the first appointment of a woman doctor to a post of this kind by Scotland Yard.

Society for Relief of Widows and Orphans of Medical Men

At a quarterly court of directors held on Jan 6th, with the president Mr V Warren Low in the chair six new members were elected, and one death and one resignation reported A sum of £1640 was voted from the ordinary funds, and one of £541 from the Brickwell fund for the payment of the half yearly grants to the 50 widows and 9 orphans in receipt of relief It was reported that £640 had been distributed in Christmas presents, each widow receiving £10 and each orphan £5 this in addition to their ordinary grants Particulars and application forms for membership from the secretary of the society at 11 Chandos-street London W 1

Fellowship of Medicine and Post Graduate Medical Association

From Jan 25th to 30th there will be an all-day course in chest diseases at the Brompton Hospital An intensive course in gynæcology will be given at the Chelsea Hospital for Women (Feb 8th to 20th) and a course in medicine surgery and gynæcology at the Royal Waterloo Hospital (Feb 22nd to March 6th) A week-end course will be held at the Princess Elizabeth of York Hospital for Children on Feb 20th and 21st M.R.C.P courses will be given as follows: clinical and pathological course at 8 P.M. on Tuesdays and Thursdays at the National Temperance Hospital (Feb 16th to 25th) chest diseases at 5 P.M. two evenings weekly at the Brompton Hospital (Feb 22nd to March 20th) heart and lung diseases at 8 P.M. on Mondays, Wednesdays and Fridays at the Royal Chest Hospital (March 1st to 20th); and afternoon neurology course at the West End Hospital for Nervous Diseases (March 8th to 20th) A course in anatomy and physiology in preparation for the primary F R C.S. examination will be given at 5 15 P.M. on Mondays Wednesdays, and Fridays from Feb 22nd to May 24th at the Infants Hospital Vincent square Surgical tutorial classes for F.R C.S (final) candidates are being given at the National Temperance Hospital at 8 30 P.M. on Tuesdays and Thursdays Further information may be had from the secretary of the fellowship 1 Wimpole-street W 1

Memorial to Dr R J Gittins

An extension to the pathological department of the Birmingham Children's Hospital was opened on Jan 6th by the deputy mayor of Birmingham Mr Alderman S J Grey The additional storey which has cost £3500 brings the pathological and biochemical departments under one roof and provides a biochemical laboratory 34 ft by 15 ft a museum and library 21 ft by 15 ft., and separate rooms for balances washing up of bottles and equipment There is an office and workroom for the pathologist, and an office and workroom for the head biochemist with cloak room accommodation for the department The ground floor has been reorganised and contains a large pathological laboratory with two separate workrooms for research scholars, a post mortem room refrigerator room for bodies a mortuary chapel and a record room The old biochemical department adjacent will serve for making routine media, sterilisation, &c a second room for X ray equipment for animals sections and bodies and a third as a photographic department with dark room for Price-Jones apparatus

The extension has been erected to the memory of the late pathologist to the hospital and a memorial tablet was unveiled bearing the following inscription:—

> "This tablet records the extension of the Pathological Department in memory of Robert John Gittins M.D. M.R.C.P. D.T.M. & H. who rendered devoted service to the Hospital as Pathologist from 1930 1934 and gave his life in an unavailing attempt to save his son from drowning on 7th October 1934"

Maternity and Child Welfare Conference

The seventh English-speaking Conference on Maternity and Child Welfare will be held at B.M.A House Tavistock-square London, W C on June 1st 2nd and 3rd under the presidency of Sir Kingsley Wood, Minister of Health. The idea running through the whole conference is to be the further evolution of the maternity and child welfare movement throughout the British Empire and the United States of America Further information may be had from the secretary of the National Association for the Prevention of Infant Mortality (Carnegie House 117 Piccadilly London W 1) which is arranging the conference on behalf of the National Council for Maternity and Child Welfare

British Empire Cancer Campaign

Sir Cuthbert Wallace P R C.S presided at the sixty first quarterly meeting of the grand council of the British Empire Cancer Campaign held in London last Monday The council tendered its sympathy to Lady Bland Sutton in her recent bereavement the late Sir John Bland Sutton was one of the founders of the campaign and was vice-chairman of the grand council for ten years Mr Stanford Cade F.R C S of the Westminster Hospital was invited to become a member of the grand council and Sir Harold Mackintosh and Mr B T Clegg were invited to represent the Yorkshire council in addition to Lord Harewood.

The following grants in addition to those totalling £28 995 which were made at the annual general meeting in November were approved on the recommendation of the scientific advisory committee: £[illegible]00 to cover the cost of special physical investigations being carried out under the direction of Dr F G Spear at the Strangeways Research Laboratory Cambridge £500 for one year to Dr H J Phelps whilst carrying out experiments in connexion with Dr Lumsden's anti-cancer serum under the supervision of Dr Gye and Prof McIntosh, and £440 for one year to Miss C F Fischmann working in the Bernhard Baron institute of pathology at the London Hospital

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Appointments

CRAIG J W M.D Dub has been appointed Assistant Medical Officer at Clare Hall Sanatorium (under the Middlesex County Council)

HIGGS S L, B Chir Camb, F R C S Eng., Orthopædic Surgeon to St. Bartholomew's Hospital.

JOSEPHS, H., M R C S Eng Senior Assistant Medical Officer at the National Sanatorium Benenden

MEYER, A., M B Cape Town, D M R E whole-time Officer in the X Ray *Diagnostic Department of St. Bartholomew's* Hospital

WEATHERHEAD, P L M B Lond., Resident Medical Officer at Barking Hospital

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Medical Diary

Information to be included in this column should reach us in proper form on Tuesday and cannot appear if it reaches us later than the first post on Wednesday morning

SOCIETIES

ROYAL SOCIETY OF MEDICINE 1 Wimpole-street W
TUESDAY, Jan. 19th
General Meeting of Fellows 5.30 P.M.
Pathology 8.30 P.M. (Royal Army Medical College Millbank S.W.) W G Barnard: 1 Microphotographic Transparencies in Colour F J [illegible] Gowar: 2 Adenoma of the Bronchus 3. Fibro-adenoma of the Lung J Gray 4 Secondary Carcinoma in the Placenta. A E Hamerton 5 Subacute Combined Degeneration of the Spinal Cord in Captive Monkeys 6 Meningo-encephalo-myelitis in a Polar Bear C C Holman 7 Diffuse Polyposis of Intestine E J King and G A D Haslewood: 8. Photometric Measurement with the Ordinary Colorimeter: the Determination of Bilirubin in Blood A B [illegible] 9 An Unusual Agglutinin Response in a Case of Enteric Dorothy M Vaux 10 Two Cases of Congenital morbus cordis in one Family
THURSDAY,
Dermatology 4 P.M. (Cases at 3 P.M.) Dr W N Goldsmith: 1 Scleroderma.
Neurology 8 P.M. Mr W Grey Walter The Electro-encephalogram in Cases of Cerebral Tumour
FRIDAY
Disease in Children 5 P.M. (Cases at 4.30 P.M.) Dr K H Tallerman 1 Infantile [illegible] with

Recovery Dr Seton Campbell (for Dr Donald Paterson) 2 Chronic Sinusitis with Early Bronchiectasis Dr Charles Kindersley (introduced by Mr H C Edwards) 3 Cirsoid Aneurysm Involving Tongue and Floor of Mouth Dr H J Wallace 4 Staphylococcal Pneumonia

Epidemiology and State Medicine 8 15 P.M Mr B E Spear and Mr A. C Gould Mechanical Tabulation of Hospital Records

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE Manson House 26 Portland place, W

THURSDAY, Jan. 21st.—8 15 P M Prof R P Strong (Harvard University) Onchocerciasis in Central America and Africa

HUNTERIAN SOCIETY

MONDAY Jan 18th —9 P M (Mansion House E C) Dr J Schoemaker (The Hague) The Surgery of Gastro duodenal Inflammation

CHELSEA CLINICAL SOCIETY

TUESDAY Jan 19th —8 30 P M (Hotel Rembrandt Thurloe place S W) Dr Arthur Hurst Neuromuscular Incoördination of the Gut

ASSOCIATION OF INDUSTRIAL MEDICAL OFFICERS

FRIDAY, Jan 22nd (London School of Hygiene Keppel street W C) —4 45 P M., business meeting 6 P M Prof. Millais Culpin The Application of Medical Psychology in Industry Followed by Miss May Smith, D Sc

SATURDAY —10 A.M (South Metropolitan Gas Co 589 Old Kent road S E), Dr W D Jenkins Clinic and Works Visit

EUGENICS SOCIETY

TUESDAY Jan 19th —5 15 P M (rooms of the Linnean Society Burlington House Piccadilly W) Dr David Forsyth Heredity versus Environment—a False Issue

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln s Inn fields W C

MONDAY Jan 18th —5 P M Mr Evelyn Sprawson Odontomes

WEDNESDAY —5 P M , Dr Russell Reynolds Movements of the Œsophagus, Stomach Duodenum, and Ileum during the Passage of an Opaque Meal

FRIDAY —Mr A S Kerr The Higher Autonomic Control of the Hollow Viscera (Hunterian lectures)

UNIVERSITY OF LONDON

TUESDAY, Jan 19th —5 P.M (University College Gower street W C), Prof. J C Drummond Problems of Nutrition (First of six lectures)

BRITISH POSTGRADUATE MEDICAL SCHOOL Ducane road W

MONDAY Jan 18th —2 30 P M Dr H MacLean Nephritis and Allied Conditions

TUESDAY —2 P.M , pathological demonstration , 3 P M Prof Schoemaker (The Hague) Acute Symptoms in the Upper Abdomen

WEDNESDAY —Noon clinical and pathological conference (medical) 2 30 P M clinical and pathological conference (surgical) 4 30 P.M Mr A. S Parkes, F R S Experimental Endocrinology

THURSDAY —Noon, clinical and pathological conference (obstetrics and gynæcology) 2 30 P.M , Dr Duncan White Radiological Demonstration 3 30 P.M Prof V H Mottram The Mother s Diet and its Influence on the Fœtus and the Newly Born Child

FRIDAY —2 P.M. operative obstetrics 2 30 P.M , Mr W B Gabriel Surgical Diseases of the Rectum 3 P M department of gynæcology pathological demonstration

Daily, 10 A.M to 4 P M medical clinics surgical clinics or operations obstetrical and gynæcological clinics or operations

WEST LONDON HOSPITAL POST GRADUATE COLLEGE Hammersmith W

MONDAY Jan 18th —10 A.M skin clinic 11 A M surgical wards 2 P M operations surgical and gynæcological wards medical surgical and gynæcological clinics 4 15 P M Mr Arnold Walker Genital Prolapse

TUESDAY —10 A M medical wards 11 A.M surgical wards 2 P M operations medical surgical and throat clinics 4 15 P M Mr Woodd Walker Pain in the Foot

WEDNESDAY —10 A.M children s ward and clinic 11 A M medical wards 2 P M , gynæcological operations, medical surgical and eye clinics 4 15 P.M Mr H P Gibb Demonstration of Eye Cases

THURSDAY —10 A M neurological and gynæcological clinics Noon fracture clinic. 2 P M , operations medical surgical and genito urinary and eye clinics 4 15 P.M Mr Edgley Curnock Aspects of Dentistry of Interest to the General Practitioner

FRIDAY —10 A.M. medical wards skin clinic Noon lecture on treatment 2 P M operations medical surgical and throat clinics 4 15 P M , Dr H W Post Demonstration of X Ray Films

SATURDAY —10 A M , children s and surgical clinic 11 A M medical wards

The lectures at 4 15 P M are open to all medical practitioners without fee

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION 1 Wimpole street W

MONDAY Jan 18th to SATURDAY Jan 23rd —ST JOHN S HOSPITAL 5 Lisle street W C afternoon course in dermatology (open to non members) —NATIONAL TEMPERANCE HOSPITAL Hampstead road N W Tues 8 30 P M Mr R Y Paton Deformities Thurs 8 30 P M Mr C A Joll Thyroid —NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland street, W , all day course in cardiology (open to non members) —ST PETER S HOSPITAL Henrietta street W C , all day advanced course in urology —Courses arranged by the fellowship are open only to members

NATIONAL HOSPITAL Queen square, W C

MONDAY, Jan 18th.—3 30 P M Mr Elmquist Demonstration of Re educational Methods

TUESDAY —3 30 P M Dr Denny Brown The Nervous Control of the Sphincters

WEDNESDAY —3 30 P M. Dr Kinnier Wilson Clinical Demonstration

THURSDAY —3 30 P M. Dr Gordon Holmes Neurosyphilis (I)

FRIDAY —3 30 P M. Dr Walshe Disseminated Sclerosis (I)

Out patient clinic daily at 2 P M

LONDON SCHOOL OF DERMATOLOGY 5 Lisle street, W C

TUESDAY Jan 19th.—5 P M , Dr W Griffith Eczema.

WEDNESDAY —5 P M., Dr I Muende Histopathology

HOSPITAL FOR SICK CHILDREN Great Ormond street, W C

THURSDAY Jan 21st —1 P M Dr Ian Gordon Modern Therapy in the Anæmias of Childhood 3 P.M Mr A Simpson Smith Bleeding per Rectum

Out patient clinics daily at 10 A.M and ward visits at 2 P M

CENTRAL LONDON THROAT NOSE AND EAR HOSPITAL Gray s Inn road W C

FRIDAY Jan 22nd —4 P M , Mr N Asherson Pyrexia of Ear Nose and Throat Origin

ST JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE 42 Ranelagh road, S W

FRIDAY Jan 22nd.—4 30 P.M Dr E P Poulton Recent Serological Experiments in the Rheumatic Diseases.

LEEDS GENERAL INFIRMARY

TUESDAY, Jan 19th —3 30 P M., Mr Armitage The Surgical Treatment of Toxic Goitre

GLASGOW POST GRADUATE MEDICAL ASSOCIATION

WEDNESDAY Jan 20th.—4 15 P M. (Royal Infirmary), Mr Donald Duff Surgical Cases

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Births, Marriages, and Deaths

BIRTHS

BROWN —On Jan 3rd at Penlea the wife of Dr J Brown of Bedlington of a son

EVERETT —On Jan 4th at Leominster the wife of Dr T F Everett of a daughter

HOLDEN TINCKER —On Jan 5th at Painswick the wife of Surg Lt Comdr R W Holden Tincker R N V R of a daughter

KIRWAN TAYLOR.—On Jan 6th at Cadogan square S W , the wife of Dr Gordon Kirwan Taylor of a daughter

LYNAGH —On Jan 3rd at Belfast the wife of Surg Lt -Comdr. T B Lynagh R.N of a daughter

MACLEOD —On Jan 3rd at 27, Welbeck street, W the wife of Mr Cameron MacLeod, F R C S , of a son

MITCHELL.—On Jan 4th at Gipsy Hill London S.E., the wife of Dr T Carlyle Mitchell, of a son

WILSON —On Jan 7th at Alexandra Park road, N , the wife of Dr G A Wilson, Tanganyika Medical Service, of a son.

MARRIAGES

MITCHELL—MCCALLUM.—On Dec. 31st at Umtali John C G Mitchell M B , Rhodesian Medical Service to Anne, youngest daughter of Mr Colin McCallum, Greenlaw, Berwickshire

PEENEY—PORTER —On Jan 4th at the Church of the Most Holy Redeemer, Chelsea Angelo Louis Peter Peeney M R C.S to Elisabeth Belle Porter B Sc. daughter of the late Geoffrey Porter, A M I C E of Worthing

WALLACE—WEATHERHEAD —On Jan 2nd at Chelsea Old Church Dr Hugh John Wallace to Dr Norah Ellen Weatherhead eldest daughter of the late Canon H T C Weatherhead of C M S , Uganda and Felstead

DEATHS

BREEKS —On Dec 31st at Broughton Craggs Cumberland Charles Wilkinson Breeks M B Edin , in his 67th year

RAND —On Jan 3rd at Brightlingsea Richard Frank Rand M D Edin F R C S Eng

RICHARDSON —On Jan 6th at Brookfield London N William Richardson M D Edin B Sc. (Pub Health) at the age of 80

SEMPLE.—On Jan 7th Lt Col Sir David Semple M D R.U.I. D.Sc Belf D P H Camb R.A M C

SWALLOW —On Jan 9th at East Grinstead, Sussex Alfred James Swallow M B Durh. formerly of Clapham Common aged 68

THACKRAH —On Jan 10th at Belsize Park-gardens Hampstead, N W Margaret Grace Thackrah B A Lond M D M R C P Lond

THOMPSON —On Jan 11th at Ellerdale road Hampstead N W Arthur Hugh Thompson M.D Camb M R C S Eng ophthalmic surgeon aged 77

TONKS —On Jan 8th at Chelsea Henry Tonks F R C S Eng, formerly Slade Professor of Fine Art in the University of London aged 74

N B —A fee of 7s 6d is charged for the insertion of Notices of Births, Marriages and Deaths

NOTES, COMMENTS, AND ABSTRACTS

THE SUPPLY OF RADIUM

IT seems clear that the trend towards the use of larger radium units will result during the next few years in a demand for radium far beyond the financial resources of the National Radium Trust. This is the conclusion stated in the seventh annual report of the National Radium Trust and Radium Commission 1935–36 which has just been issued (H.M. Stationery Office, Cmd. 5342. 1s. 6*d*.). There was a prospect for a time that a further large stock of radium might form part of the national memorial to the late King George, but that prospect has not materialised. In the same report the Commission states that good progress has been made at almost all the national and regional centres. At some of them the volume of work has grown so as to require additional medical personnel and to make it possible to appoint a deputy for the radium officer when on leave or visiting other centres. *There is a gratifying tendency to include a* physicist in this personnel. Another direction in which growth is desirable is in the provision of pay beds at centres. Unless these are provided the middle-class section of the community is largely deprived of the opportunity of radiation treatment and the Commission is prepared to consider projects by which centres can use national radium for the treatment of patients in pay beds, up to 20 per cent of the whole bed provision. The Commission is also advocating a system of outpost centres in the various areas for the purposes of examination, diagnosis, and follow up. The need for such questing is emphasised by a calculation that of the 40 000 patients estimated to be suffering from cancer in accessible organs only about 8000 actually obtain radiation treatment. Delay in seeking assistance, it is suggested, is caused more by *fear of the treatment than* by ignorance and there is no doubt that surface radiation does away with many of the objections felt by patients to interstitial radiation. Radium beam treatment is, however, not only costly in time and material but cannot be more widely used without a substantial increase in the amount of radium available and this consideration is the basis of the Trust's statement that far more radium will shortly be required.

ALCOHOL AND MOTOR ACCIDENTS

AT a meeting of the Society for the Study of Inebriety held on Jan. 12th Dr. H. M. Vernon pointed out that though road traffic accidents have in the last two years, receded a little on the maximum observed in 1934 *the fatalities still average 18 a day* and the injuries over 600. The Ministry of Transport attributes more of the fatalities to pedestrians than to drivers, but estimates made in other countries assign from 67 to 80 per cent. of them to drivers.

THE SPEED FACTOR

Speed appears to be the most important cause of accidents and the Ministry of Transport considered that a fourth of the fatalities attributed to drivers in 1935 was due to excessive speed; but many of the other causes tabulated were due in some degree to this cause. The Ministry's data show that private cars and motor cycles incurred their largest proportion of accidents when travelling at a speed of 20 to 40 miles an hour whilst vans, lorries, and public conveyances incurred their largest proportion at a speed of 10 to 20 miles. As it is estimated that these latter vehicles travel 8 to 16 times further than motor cycles before causing a fatality and two to three times further than private cars it appears that there is a close relationship between speed and accidents. In Berlin it was found that when the speed limit for lorries and taxi-cabs was suspended, accidents increased two to threefold; but the rules governing the speed limit of private cars were not altered, and in their case accidents remained unchanged. Converse evidence was obtained in Rhode Island, U.S.A., for when the average speed was reduced from 37 to 31 miles per hour the fatalities were reduced 27 per cent.

The importance of the speed factor is emphasised because of its relation to the effects of alcohol consumption on drivers. The Committee of the British Medical Association on 'The Relation of Alcohol to Road Accidents' reported, in 1935, that 'very moderate quantities of alcohol (e.g. 3 oz. of whisky) had been shown by psychological tests to diminish attention and control and to reduce the rapidity and accuracy of coördination with which movements of the eyes, hands, and legs are made. The alcohol must therefore frequently affect the driving capacity of the driver.' It is evident that the adverse effects are more likely to lead to an accident the greater the speed of driving. The influence of a small error becomes *magnified in direct proportion* to the speed, whilst the distance within which a car can be pulled up when a pedestrian or other possible obstruction is seen varies with the square of the speed. The reaction time is increased 0·1 to 0·4 second and alcohol has the additional effect of causing drivers unconsciously to accelerate their speed. Tests made on twenty subjects by means of a motor driving apparatus showed that after drinking 2·8 oz. of whisky the rate of driving increased 0 per cent. on an average while the driving errors increased 13 per cent. An acceleration of the kind mentioned indicates the importance of all cars being compulsorily provided with a speedometer.

UNDER THE INFLUENCE OF——

The data adduced by the Ministry of Transport indicate that only 1 in 80 of the fatalities attributed to various road users were due to the persons concerned being obviously 'under the influence of drink or drugs,' but evidence from America suggests that alcohol plays a much larger part in motor accidents. It is stated that though alcohol is directly mentioned in only 7 to 10 per cent. of the fatal traffic accidents the traffic commissioners believe that probably a third or a fourth of the motor accidents are partly attributable to the consumption of alcohol by the drivers. A new method of obtaining evidence on this problem is now being investigated. It is based on the determination of the alcohol content of small samples of the blood or urine taken from the driver soon after an accident has been incurred.

Estimates made by several independent investigators showed that of the persons having 1·0 part of alcohol per 1000 in their blood from 40 to 63 per cent. were found to be 'under the influence'; of those with 1·7 parts from 80 to 88 per cent. were so affected and of those with 2·0 parts, the whole were so affected. As regard the blood analyses made on persons involved in motor and tram traffic accidents two Swedish investigators found that 33 out of the 113 persons tested had more than 1 part of alcohol per 1000 in their blood. An American investigator found that of 119 drivers involved in motor accidents, 11 had 1·4 to 3·6 parts of alcohol in the blood while 74 of them had more than 0·2 part. Analyses of the blood of 208 persons involved in traffic accidents in Munich showed that only 8 per cent. were practically alcohol free; 1 per cent. had 0·01 to 1·00 part; 39 per cent. had 1·01 to 2·00 part and 3 per cent. had 2·01 parts or more.

The frequency with which large amounts of alcohol were found in the blood in Munich was due to the police having compulsory powers for taking blood samples in cases of accident and apparently they exercise these powers only when they suspect alcohol as a causative factor. Persons with considerably less than 1 part of alcohol per 1000 in their blood may have their driving adversely affected even though they do not appear to be 'under the influence.'

for it is found that after drinking three ounces of whisky—which produces adverse effects in most persons—the blood is found to contain, as a maximum, 0 3 to 0 4 part of alcohol per 1000

The logical conclusion is that advanced by the *Times* in a leading article when it said, "As things stand at present there would appear to be no absolute safeguard for the motor driver but total abstinence" Such abstinence should be practiced several hours before driving, as well as during its course, owing to the slowness with which alcohol disappears from the blood

THE RED CROSS IN SPAIN

A MEMORANDUM from the International Red Cross Committee at Geneva states that 35 national red cross societies have now contributed to the relief of sufferers in the Spanish civil war, their donations amounting to 459,398 Swiss francs, of which over 330,000 francs has come from South America These gifts are administered by the International Committee with impartiality, and the sums received have made it possible for medical supplies for the treatment of wounded, on both sides, to be sent in increasing quantities Information bureaux have been established at a number of centres, and delegates of the International Committee are working at Madrid, Valencia, Barcelona, Burgos, Santander, Bilbao, San Sebastian, Alicante, Seville, Saragossa, and Palma de Majorca The Committee's delegates have been authorised nearly everywhere to visit the prisons, and agreements have been established whereby the release of women, children, boys under 18, adults over 60, and invalids has been secured Arrangements for the future care of orphans are in train The delegates have encountered a promising spirit of coöperation on both sides, but a good many difficulties arise in carrying out the letter of the agreements Unfortunately certain commodities, such as coal, are already scarce in Spain, food rationing is being instituted, and the question whether the Red Cross can undertake the supply of a minimum of the necessities of life to women, children, invalids, and prisoners is under consideration. The sums required would far exceed those received up to the present, and so far the most that can be attempted is the supply of a few parcels of food and condensed milk to sick prisoners

Donations to the Red Cross Spanish Relief Fund may be sent to the director-general of the British Red Cross Society, 14, Grosvenor-crescent, London, S W 1

Messrs E MERCK, of Darmstadt, manufacturers of chemicals and medicinal specialties, announce that the selling rights for their preparations in the United Kingdom and Irish Free State are now in the hands of Messrs Savory and Moore Ltd of 61, Welbeck-street, London, W 1 Their publicity department, established in this country for the convenience of medical practitioners wanting information and samples of the Merck products, has been moved to 60, Welbeck-street, W 1, and requests should still be directed to this office

Vacancies

For further information refer to the advertisement columns

Accrington Victoria Hosp—H.S. £150

Arlesey Beds Three Counties Hospital—Temp Asst M O 7 guineas per week

Ashton under-Lyne District Infirmary—H.S at rate of £150

Bath Ear Nose and Throat Hospital—Hon Asst. Surg

Beddington and Wallington U.D C—M O H £800

Birmingham City—Res Asst M O £400

Birmingham City Education Committee.—Part-time Aural Surgeon 2½ gns per session

Birmingham Royal Cripples Hospital.—Res H.S at rate of £ 00

Blackburn Brockhall (Certified Institution for Mental Defectives) Langho—Asst. M O £500

Bootle County Borough—Asst. M O H and Asst School M O, £600

Calcutta, All India Institute of Hygiene and Public Health—Director, Rs 1450

Canterbury, Kent and Canterbury Hosp—H P at rate of £1 5

Cardiff Royal Infirmary and Welsh National School of Medicine.—Hon Dermatologist and M O for Male V D Centre at rate of £250

Carshalton Queen Mary's Hosp for Children—Res Med Supt. £1400

Chesterfield and North Derbyshire Royal Hosp—H.S to Ophth. and Ear, Nose, and Throat Depts at rate of £150

City of London Hosp for Diseases of the Heart and Lungs Victoria Park, E—H.P, at rate of £100

Derby, Derbyshire Royal Infirmary—Gynæcological H.S. and Emergency Anæsthetist, £150

Dewsbury, and District General Infirmary—Sen and Second H S £200 and £150 respectively

Doncaster Royal Infirmary and Dispensary—Res Surg O and Cas H S, £250 and £175 respectively

Ealing Borough—Res Asst M O, £350

Eastbourne Princess Alice Hosp—Res H.S, £150

Eastbourne, Royal Eye Hosp Pevensey road—H.S £100

East Ham Memorial Hosp Shrewsbury road E—H P, at rate of £150

Edinburgh General Board of Control for Scotland—Deputy Commissioner, £738

Edinburgh, National Association for the Prevention of Tuberculosis—Secretary General in London, £600

Enfield Urban District Council—Deputy M O H and Asst. School M O, £600

Evelina Hosp for Sick Children Southwark S E—H.P at rate of £120

Gloucester County Council—County M O.H and School M.O £1200

Grimsby and District Hosp—Surgeon for Orthopædic Dept and Fracture Clinic £350 Also Sen H.S and H P, at rate of £200 and £150 respectively

Halifax Royal Infirmary—Third H S at rate of £150

Hertford County Hosp—H.P at rate of £150

Hull Municipal Maternity Home and Infants' Hosp—Jun Res. M O, at rate of £100

Inverness Royal Northern Infirmary—Hon Surgeon to Ear Nose, and Throat Dept

Kingston and District Hosp—Med Supt £1200

Lancaster, Royal Albert Institution for the Feeble Minded—Res. Jun Asst. M.O £375

Leamington Spa Warneford General Hospital.—H.P, at rate of £150

Leeds City—Part time M O for Transport Dept.

Leeds General Infirmary—Res Surg O, £200

London County Council—Asst M O s Grade 1, £350

London Jewish Hosp Stepney Green E—Hon. Surgeon

Maidstone West Kent General Hospital—H.S £175

Manchester, Ancoats Hospital—H.S, at rate of £100 Also Asst Surg O 10s 6d per attendance

Manchester County Mental Hosp, Prestwich—Locum Tenens M O 5 gns per week

Manchester Hospital for Consumption and Diseases of the Throat and Chest—Asst M O for Crossley Sanatorium, at rate of £200 Also Res M O for St Anne s Home, £200

Manchester Northern Hospital, Cheetham Hill road—Res. H.P and Res H.S, each at rate of £100

Manchester Withington Hospital—Cons Obstet and Gynæcologist at rate of £300

Metropolitan Hosp E—Psychiatrist

Middlesex Hosp W—Res M.O £400

Newcastle upon Tyne Hosp for Sick Children—Sen Res. M.O. £250 Also H.P and H S each at rate of £100

Newcastle-on Tyne Wooley Sanatorium, near Hexham.—Asst. M.O £350

Newport Mon Royal Gwent Hosp—Sen H S Also second H S at rate of £250 and £135 respectively

Peppard Common Oxon, Berks and Bucks Joint Sanatorium—H P, £250

Preston Sharoe Green Hosp—Jun. Asst. Res M O at rate of £100

Princess Elizabeth of York Hosp for Children, Shadwell E—Asst. Surg

Rhondda Urban District Council—Asst M O £500

Romford, Oldchurch Hosp—Jun Res M O £250

Royal London Ophthalmic Hosp, City road, E C—Gifford Edmonds Prize in Ophthalmology £100 Also Hon Asst Physician

St Albans County Institution Osler House—H.S, at rate of £150

Shrewsbury Royal Salop Infirmary—Res H S at rate of £1

Southend-on Sea General Hosp—First H S at rate of £100

Stoke on Trent Burslem Haywood and Tunstall War Memorial Hosp—Res H S at rate of £175

Stoke-on Trent Stanfield Sanatorium.—Res M O, £350

Surrey County Council—Asst. M.O £600

Torquay Torbay Hosp—Locum Tenens Res H.P, 6 gns a week.

University College Hosp Gower street, W C—Registrar to X Ray Therapy Dept £250

Victoria Hospital for Children Tite street, Chelsea S W—Cas O at rate of £200 Also H.P and H S, each at rate of £1

West End Hospital for Nervous Diseases 73 Welbeck street W—Hon. Psychotherapist. Also two Res H P s, each £1

Wolverhampton Royal Hosp—Asst. Res M O to Gynæcological and Obstet. Dept. at rate of £100

Medical Referee under the Workmen s Compensation Act, 1925 for the Deal Dover, Folkestone and Hythe County Court Districts (Circuit No 49) Applications should be addressed the Private Secretary Home Office, Whitehall London S W 1 before Feb 3rd

ADDRESSES AND ORIGINAL ARTICLES

SURGICAL TREATMENT OF CARDIAC ISCHÆMIA*

BY LAURENCE O SHAUGHNESSY M.D Durh
F R C S Eng

HON CONSULTANT TO THE LAMBETH CARDIOVASCULAR CLINIC (LONDON COUNTY COUNCIL) AND CONSULTING AND THORACIC SURGEON TO THE BRITISH LEGION SANATORIUM PRESTON HALL, AND TO THE NOTTINGHAMSHIRE COUNTY COUNCIL

With an Introduction by

Viscount DAWSON OF PENN P R C.P Lond

Introduction

(LORD DAWSON)

IT is only natural to suppose that a muscle which is unceasingly active from its birth to its death and which shows a large and quickly varying range in its output of energy must have provision for a large blood-supply and be sensitive to deficiencies thereof

In fact the healthy heart muscle *has* this capacious blood-supply for it is calculated that during exercise the flow of blood through the coronary arteries per minute is 1 4 litres, which is over three times the volume of the heart. Again, if there is a 50 per cent. fall in oxygen saturation of arterial blood the coronary flow may in compensation increase fourfold.

An organ so abundantly active, if it is to preserve its function and healthy structure, must be secured adequate nourishment. Absence of that nourishment will produce similar areas of degeneration in the myocardium whether narrowed arterial channels make quantity of blood inadequate, or inadequacy of oxygen content makes the quality of blood defective. Thus Büchner reduced the oxygen carrying capacity of the blood in rabbits by bleeding or by inducing a state of carbon monoxide poisoning At the autopsies multiple areas of necrosis were scattered throughout the myocardium, a finding resembling that present after coronary obstruction in man Or again when Kountz and Hamouda perfused the isolated dog's heart with venous blood the resulting oxygen starvation gave electrocardiographic tracings from that heart resembling those of coronary occlusion

Turning to the evidence of clinical records Büchner Weber, and Hanger have published 43 fatal cases of cardiac ischæmia. These comprise failure of blood supply by (1) coronary thrombosis in an apparently normal coronary tree (2) thrombosis complicating atheroma of the coronary arteries (3) rigidity and narrowing of the arteries of the coronary tree without gross obstruction and (4) syphilitic aortitis when only the orifices of the coronary arteries were affected In all these cases there were alike the characteristic electrocardiogram and at autopsy the characteristic pathological changes in the myocardium—viz with obstruction of a main coronary artery there was an old or recent infarct while with no actual block but a general narrowing of the arterial channels there were scattered areas of recent necrosis or old fibrosis.

In cases therefore where occlusion is not immediately destructive of life, the problem is to secure an adequate compensatory circulation to the myocardium The difficulty is not that the anastomoses are incapable of development but rather that the vascular needs of the myocardium are so great.

Spalteholz has demonstrated a rich anastomosis between the right and left coronary trees and between the branches of the same artery but the effectiveness of these and the capillary beds they feed would be impaired in some cases of arterio sclerosis There are further anastomoses between the coronary tree and the vasa vasorum of the aorta and pulmonary artery but how far this network of collateral vessels is effective in surviving cases of coronary occlusion is not known. On the other hand it is known that pericardial adhesions can form an effective collateral circulation But the existence of such adhesions in a case of coronary occlusion is a chance and uncommon happening Thus in Parkinson and Bedford's 83 autopsies on cases of coronary occlusion there were 11 cases of pericarditis

The vascular effectiveness of such adhesions is demonstrated by a striking case published by Thorel. The patient died of carcinoma and the post mortem showed an old adhesive pericarditis side by side with a complete and long standing obliteration of the main stems of both left and right coronary arteries There had been no history of cardiac distress during life For a long period the myocardium must have had its supply from this collateral circulation

Moritz by injection studies has been able to establish the existence of vascular connexion through these adhesions between the pericardium and coronary tree

It follows therefore that in a considerable coronary occlusion collateral circulation must eventuate if the myocardium is to be saved Such a compensatory circulation can form of itself; where it does not do so the use of surgical means to establish it is essentially reasonable and its prospect should be good in carefully selected cases provided the capillary bed itself is not too degenerate to profit by a renewed arterial supply

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Experimental Relief of Cardiac Ischæmia

VARIOUS ingenious methods have been used to produce ischæmia in the heart of the experimental animal. The most ingenious were perhaps those of Vogt (1904) who injected lycopodium seeds in a fluid suspension down the carotid artery with sufficient force to close the semilunar valves and drive the seeds into the coronary circuit Ligature of various *branches of the coronary artery is of course a much* older experiment and it has been found that like man the animal will usually survive occlusion of a main trunk more especially ligature of the descending branch of the left coronary True there remains an infarct and in the period of acute ischæmia the heart is very sensitive so that some chance stimulation may produce a fatal fibrillation but serious after-effects do not usually appear Ligature of the right coronary artery is a rather more severe operation and ligature of the left coronary before it has given off its circumflex branch *is fatal*

Leriche and Fontaine have lately made important contributions to the experimental study of coronary occlusion They found that the perivascular nervous plexus of the coronary vessels played a significant part in the reaction of the mammalian heart to coronary ligature A preliminary injection of the perivascular plexus diminished the risk of ventricular fibrillation and enabled the animal to maintain a blood pressure adequate for the best use of the normal collateral channels Further, they claimed that excision of the neighbouring ganglia favoured the formation of a good collateral supply, as they had shown to be the case in experimental occlusion of the vessels of the lower limb It is true that there is an important school who would attribute all coronary vasoconstrictor effects to the vagus and not to the sympathetic The exact experiments of Rein, using his "stromuhr" and making his observations on the intact animal, seemed indeed to demonstrate this point quite clearly, but in the present uncertainty as to the exact morphology of the autonomic nervous system this is only typical of the inconsistencies with which the literature of the system abounds

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* A special lecture introduced by Lord Dawson delivered before the Royal College of Surgeons of England on Jan 15th 1937 Lord Dawson spoke as head of the cardiovascular clinic at Lambeth Hospital where the clinical work described by Mr O'Shaughnessy is being done.

Leriche and Fontaine were also attracted to the possibilities of operation on cardiac aneurysm and for this purpose employed a free graft of the pectoralis muscle (1932)

In 1935 Beck and Tichy published the results of some animal experiments in which various grafts fashioned from the fibrous pericardium, muscles of the chest wall and omentum were applied to the surface of the heart, after preliminary destruction of the epicardial endothelium The method and results of these experiments were not recorded, but they described some other experiments in which a large area of epicardium was removed so that massive adhesions formed between the heart and the parietal pericardium these animals were able to withstand almost complete occlusion of both main coronary trunks, which was effected by means of silver bands

My own experiments on cardiac grafting were proceeding at the same time as the work recorded by Beck, the first omental graft being performed at Downe in the spring of 1933, but while Beck was stimulated by Moritz's work on vascularisation of pericardial adhesions, my own experiments had their origin in some earlier work on resection of the thoracic œsophagus, when the valuable properties of a pedicled omental graft first became apparent to me I had also been encouraged to repeat some of the Leriche experiments on ligature of the coronary artery using control of the nervous factor, and I was aware of the earlier observations of Klose (1922), who had noted the capacity of free grafts of omentum to replace excised portions of parietal pericardium

In a previous paper (1936) I have described the first results of a series of omental grafts in the cat and the greyhound These demonstrated that the presence of such a graft is compatible with the highest degree of physical exertion Greyhounds which had suffered ligature of the descending branch of the left coronary artery chased the electric hare round a full course (525 yards) without distress after the operation of cardio omentopexy

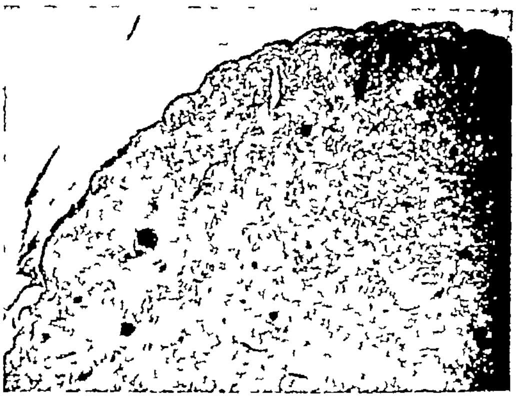

FIG 2—Section of myocardium of cat showing pigment injected through an omental graft (× 50)

To demonstrate the existence of vascular connexions between the graft and the heart of the animal, the organ was removed from the chest by severing all the great vessels and was suspended to a retort-stand, leaving the graft as its sole connexion to the animal The abdominal aorta was cannulated and the injection fluid (in most cases a watery suspension of Indian ink but in others a coarse injection medium composed of starch, carmine, and gelatin) was delivered at a pressure of 120 mm of Hg In these conditions the fluid was seen to fill the coronary tree until it appeared in the cavity of the heart and dripped out from the cut ends of the aorta and pulmonary artery (Fig 1) The injected material was visible to the naked eye, and in microscopical sections could be demonstrated lying in the deeper branches of the coronary artery even under the endocardium (Fig 2)

It is important to emphasise that vascularisation occurred whether the graft was applied to a normal heart to a recent infarct, or to an old infarct, for these are the three possible choices with which one might be presented when operating for the relief of cardiac ischæmia in man. It must also be stressed (in view of one recent criticism) that when the graft was applied to an infarct general connexions were established through the infarcted area with the remainder of the coronary tree The graft was always so applied to the apex of the heart as to overlap the territories supplied by the right and by the left coronary arteries

During the past year further experimental evidence of the vascularisation power of the cardio omental graft has

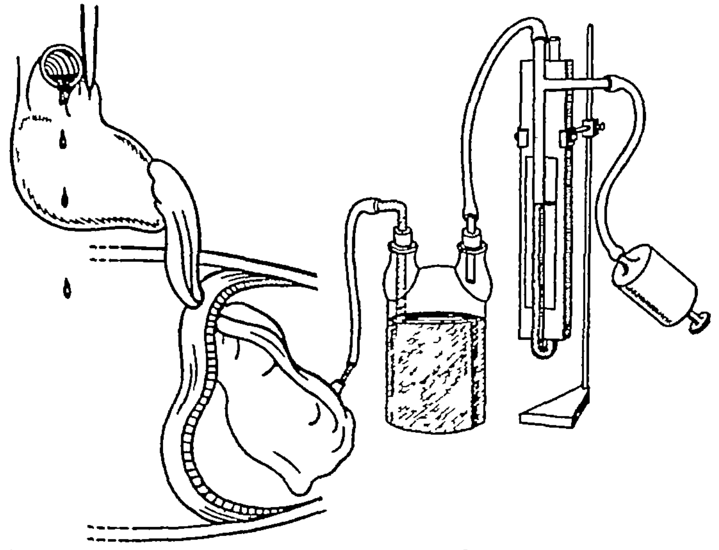

FIG 1.—Injection of blood through an omental graft into the heart to demonstrate the vascular connexion

accumulated and some of the more important findings will now be summarised.

1 *Histological evidence without the use of injection* —On examining the heart a week after application of the graft a very large primitive vessel could be seen growing into the myocardium (Fig 3)

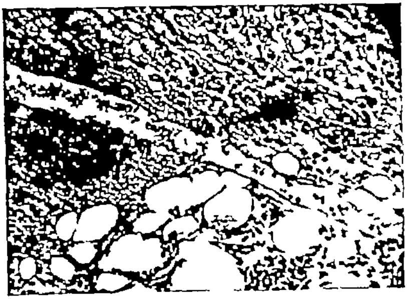

FIG 3.—Section through junction between myocardium (above) and omentum (below) a week after operation A large primitive vessel is growing from the omentum into the heart muscle. (× 1 0)

2 *Biological evidence of the protective function of the omentum* —In an experiment performed by Mr George Mason (details of which will be published later) a diaphragmatic graft was applied to the surface of the heart after ligature of some branches of the coronary vessels The animal was killed some months afterwards and it was then discovered that the omentum had made its way through a small defect left at the base of the diaphragmatic flap and had firmly attached itself to the ischæmic area in the wall of the heart.

3 *A long-term experiment* —On Dec 8th 1936 there was killed a greyhound which had been subjected to ligature of the descending branch of the left coronary artery on March 21st 1935 He had a cardio-omentopexy on May 28th, 1935 and on Sept 12th, 1935 there is the note Exercise tolerance tested on track. Running capacity normal run finished in very good order The appearance of the heart is shown in Fig 4 There was an extraordinary vascularity of the mediastinum and there were numerous vascular connexions between the graft and the anterior mediastinum Anastomoses could also be seen between the vessels of the diaphragm and the base of the graft The heart was then removed from the chest and an injection carried out in the usual way using a barium emulsion Complete filling of the coronary tree was obtained and on the radiogram the injected trunk of the left coronary artery could be seen.

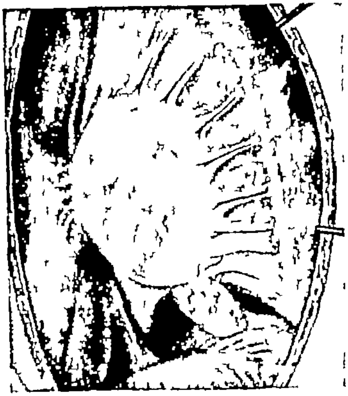

FIG 4 —Dissection of thorax of a greyhound eighteen months after cardio-omentopexy showing vascularity of mediastinum and vascular connexions between graft and mediastinum

* * * *

The omentum is the only structure in the body with the specific property of vascularisation and many years ago Rutherford Morison recognised the practical importance of this fact The only uterine fibroids which can attain to colossal size are either retroperitoneal or depend chiefly upon vessels derived from the omentum for their continued growth The largest I ever removed was of the subperitoneal variety It had a thin and narrow pedicle below but above was capped by omentum which carried to it at least half a dozen arteries of the size of the brachial.

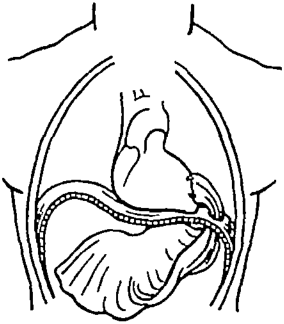

FIG 5 —Diagram illustrating cardio-omentopexy in man

In its inventor's hands and in those of his immediate successors omentopexy proved a useful operation for selected cases of cirrhosis of the liver Prof Grey Turner is still in touch with a patient who has remained well since his operation in 1906. Personal experience of it in the Sudan confirmed my belief in its value provided Morison's exact technique was followed and the choice of case was correct More recently the therapeutic value of omentopexy in cirrhosis has been questioned, but all authorities are agreed as to the remarkable vascularising powers of the organ even Hughson who condemns it as treatment for cirrhosis, agrees on this point and quotes the Mayos and other surgeons of experience to the same effect. Thus even if it is conceded that omentopexy cannot cure cirrhosis of the liver—a condition whose ætiology and pathology remain after all, to a large extent obscure—the essential theoretical basis of cardio-omentopexy (Fig 5) remains unshaken Apart altogether from the clinical experiences of Rutherford Morison Sir David Wilkie's early and complete experiments on the omentum gave an initial impetus to its use in the surgery of the chest. Wilkie showed how in the cat the omentum could avert the disaster which normally follows ligature of all the vessels to the spleen and there seemed no reason why if the omentum could compensate for acute ischæmia in its natural milieu it should not fulfil a similar function once it gained access to the thoracic cavity

Cardio-omentopexy in Man

The school of thoracic surgery to which I belong has always held that major operations on the chest are only justifiable, and only successful, when there is full collaboration between physician and surgeon It is not enough for the physician to refer a case, he must be in close contact with the patient just before the operation and must indeed help to select the time for it, and he and the surgeon must share the conduct of the post operative treatment The recent development of radiological and other special methods of examination have done nothing to invalidate this principle, and it is of course of special importance before operation is performed on the human heart I should like to emphasise that although the operation of cardio omentopexy was devised in a surgical laboratory and its technique has been modified according to purely surgical contingencies, I have performed it only after careful consultations with the medical staff of the Lambeth Cardiovascular Clinic (Lord Dawson of Penn, Dr Daniel T Davies, and Dr H E Mansell) In addition the suitability of each patient for general anæsthesia has been assessed by Dr J K Hasler, whose advice and assistance have been available at each operation The elimination of post operative shock has been made possible by experimental work done in the laboratories of the Royal College of Surgeons, but the successful conduct of the ten days following operation has depended on unremitting medical care

ALTERNATIVE OPERATIONS

Before describing the way in which a graft may assist in recovery from cardiac ischæmia, it is perhaps necessary to refer to some alternative procedures In all cases of cardiac ischæmia there is probably a vasospastic factor, and this is of special importance in diffuse atheroma of the tree—as is suggested by the beneficial effect of the nitrites in angina of this type It therefore appears logical to attempt to influence this spasm by nerve section, and the evidence in favour of *sympathectomy* has been summarised by Leriche (1935)

In the past (1926–31) I have from time to time carried out sympathectomy, but more recently, when an intervention on the nervous side was indicated, I have used the Mandl technique of *paravertebral injection* This operation proved most successful in the case of a man of 78, whom I discovered as a bed ridden patient with frequent anginal attacks and who was afterwards able to resume a normal life of such activity as was compatible with his age At the same time, he has continued to have attacks of faintness, and these attacks he describes as essentially similar to his old attacks, with, for him, the important difference that they are painless Experience of this case finally freed me from the old bogy that it was wrong to remove the warning signal (the "red light" of Mackenzie) of pain in the angina of effort, the patient still receives the warning if he attempts too great exertion, but the removal of the pain has been in every way beneficial. This case also confirmed me in my belief that attempts to remove the nervous factor should be reserved for patients whose age or general condition precluded a direct attack on the ischæmic factor It is established that fatal angina occurs only when there is definite and gross disease of the coronary tree, and it seems reasonable to assume that if a new blood supply can be furnished the effect of spasm of the diseased vessels will lose its significance, and if, as now seems probable, the seat of the pain is the anoxæmic myocardium, pain should be abolished and cardiac efficiency maintained. So far as we can tell from our initial cases, the graft does seem to have this effect, although the possibility that in certain patients the nervous factor may also require control cannot yet be excluded

Another indirect operation of extraordinary interest is *total thyroidectomy*, first performed for the relief of congestive heart failure by Cutler in 1932 Since then several series have been published both in America and in this country, and Levine states that the immediate mortality is between 5 and 10 per cent Undoubtedly this operation has been an important contribution to cardiovascular surgery and it should encourage further efforts to influence incurable cardiovascular disease through the endocrine system.

DEATH FROM CARDIAC ISCHÆMIA

Cardiac ischæmia can cause death in various ways, some of which must be considered in relation to cardio omentopexy The mechanism of some deaths—e g, rupture of the heart into the pericardial sac—is quite clear, that of others is less so

Of special interest in a general way, although not of course immediately related to treatment by grafting, are those cases in which sudden death follows occlusion of some quite small branch of the coronary tree and is presumably caused by the operation of some nervous reflex It seems probable that the mode of death is similar to that sometimes seen in pulmonary embolism when the embolus has been too small to have any significant effect on the mechanical efficiency of the pulmonary circulation. The shock associated with sudden occlusion of a larger vessel may also prove fatal, especially if morphia in adequate dosage is not given

The mode of death in those comparatively rare cases of coronary thrombosis in which rupture of the infarct occurs soon after the occlusion is clear either the immediate collateral supply has been inadequate or, more probably, an extension of the thrombotic process has limited access of collaterals to the ischæmic area The course of other cases in which a state of permanent cardiac inefficiency follows an initial vascular catastrophe, whether the inefficiency be marked by swelling of the feet and enlargement of the liver, by recurrent attacks of acute respiratory distress, or by persistent angina of effort, may be explained on the basis of a myocardial blood supply sufficient to maintain life but insufficient for normal cardiac function The fact that the infarct following coronary thrombosis often involves the deeper layers of the myocardium together with the endocardium explains the source of the peripheral emboli, either pulmonary or systemic in distribution, which are one of the more serious complications of acute cardiac ischæmia The myocardial failure of syphilitic aortitis, although frequently sudden in its fatal ending, is commonly marked by a period of recurrent angina of effort, and the mechanism of the gradual strangulation of the coronary supply at its source is in the main comprehensible More mysterious are the factors which determine an eventual failure of the ischæmic heart in chronic hypertension, for often the attendant circumstances of a fatal attack of heart failure do not at first differ from those of attacks which have in the past been survived, nor do the gross or microscopic appearances of the heart at autopsy appear inconsistent with continued survival. Goldenberg and Rothberger have shown that the perfusion coefficient is lowered in the hypertensive heart and their work is a useful reminder that functional as well as morphological methods may be employed in the estimation of cardiac ischæmia.

FUNCTION OF THE GRAFT IN VARIOUS DISORDERS

(see Fig 6)

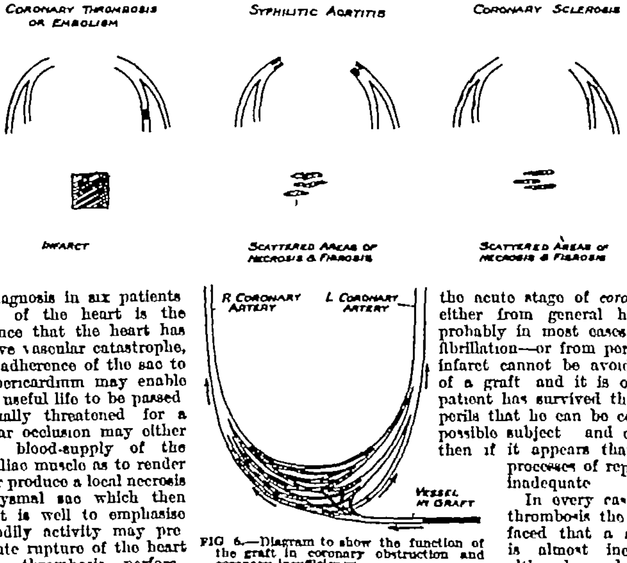
Coronary Thrombosis or Embolism
Syphilitic Aortitis
Coronary Sclerosis
Infarct
Scattered Areas of Necrosis & Fibrosis
Scattered Areas of Necrosis & Fibrosis
R Coronary Artery
L Coronary Artery
Vessel in Graft

FIG 6.—Diagram to show the function of the graft in coronary obstruction and coronary insufficiency

The interest of the surgeon is of course specially directed towards *cardiac aneurysm*—one of the less common sequelæ of acute cardiac ischæmia—and this interest has naturally been more general since Sauerbruch's astonishing success with radical operation for the condition Although aneurysm of the heart is rare—Huchard in the course of his career is said to have observed only three cases—its rarity must not be exaggerated for in one year alone three cases came to autopsy in Lambeth Hospital and in 1934 Steel reported its intra vitam diagnosis in six patients An aneurysm of the heart is the clearest evidence that the heart has suffered a grave vascular catastrophe, and although adherence of the sac to the parietal pericardium may enable some years of useful life to be passed life is eventually threatened for a second vascular occlusion may either so limit the blood-supply of the remaining cardiac muscle as to render it inefficient or produce a local necrosis of the aneurysmal sac which then perforates It is well to emphasise that while bodily activity may predispose to acute rupture of the heart after coronary thrombosis perforation of an aneurysm of the heart is due to a second vascular occlusion and *not* to some additional strain In the last case I observed the perforation occurred with the patient quite quietly resting in bed as she had done since her initial thrombosis some two months previously

In this case the sac of the aneurysm had failed to adhere to the pericardium and this was also the condition in another aneurysm I observed in which the patient died of progressive heart failure a few months after her initial thrombosis The fate of these two patients is in striking contrast to the favourable immediate course when parietal adhesions give access to an additional collateral supply: the historical case of Sternberg (who coined the term pericarditis epistenocardica) the case of Fugiami and the case reported by Koch and Kong may be cited

The graft as we have demonstrated on animals operates in several ways Not only is a new blood supply brought into direct relationship with the ischæmic area and with the coronary tree but the normal collaterals in the mediastinum are both reinforced and given access to the ischæmic heart This second function of the graft appears more important in man than in the animal for the vessels surrounding the pericardium seem in proportion larger As an example of this I would instance the inferior sternopericardial ligament (shown in Fig 9) which in the living patient appears as a much more important structure than studies in the cadaver would lead one to suppose Many vessels ramify in the subpleural fat which covers this ligament which is of course, so placed as to provide an immediate collateral supply through the pericardium when a superficial infarct occurs at the site of election which is on the anterior aspect of the organ in the region of the apex. At operation the graft is always arranged in such a way that adhesion with this ligament may develop A third function of the graft which Beck has recently emphasised is its bridge action in supplementing the natural anastomosis between the right and left coronary arteries

It is obvious that deaths during the acute stage of *coronary occlusion* either from general heart failure—probably in most cases a ventricular fibrillation—or from perforation of an infarct cannot be avoided by means of a graft and it is only when the patient has survived these immediate perils that he can be considered as a possible subject and of course only then if it appears that the natural processes of repair have been inadequate

In every case of coronary thrombosis the fact must be faced that a second attack is almost inevitable and although under favourable conditions this may be postponed for years the exact time of its coming cannot be predicted. It is also clear that recovery from a second attack is only likely if natural repair and compensation for the first attack have been efficient and the provision of an alternative blood supply would be especially valuable when after an attack of coronary thrombosis natural compensation has been inadequate Under these conditions the provision of an additional blood supply would serve two purposes In the first place better nutrition of the still functioning myocardium might improve its performance and in the second place once the heart was in possession of an alternative supply the accident of a second vascular occlusion should be less likely to be fatal

The factors governing the onset of *ventricular fibrillation* in a heart containing an old fibrosed infarct are most mysterious and as several authorities have pointed out autopsy often reveals no mechanical cause for the fatality—indeed from the post mortem appearances the accident might just as well have occurred months previously or not at all It is possible that these circumstances might provoke the ideal indication for operation on the autonomic nervous system, at present the one certain factor is the ischæmia, and control of this factor might prevent deaths from ventricular fibrillation.

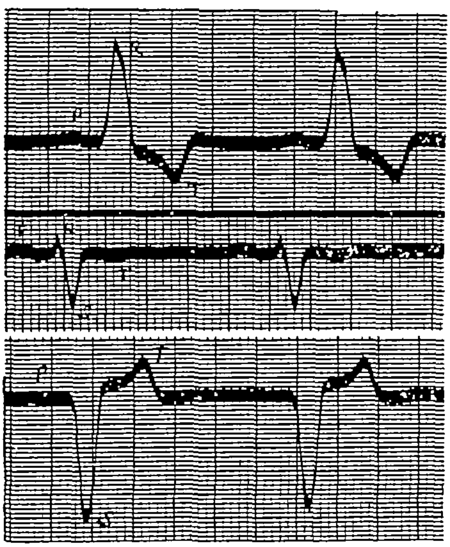

FIG 7 (Case 5)—Electrocardiogram taken before operation showing myocardial degeneration

Mention has been made of the *embolic complications* of coronary thrombosis These sometimes occur early in the illness and cannot be influenced by grafting, but as presumably the efficient organisation of the deeper layers of the infarct is the only protection against the detachment of emboli and this organisation in turn depends on the efficiency of the natural collateral channels, a graft might serve a useful function in some of the delayed cases

In cardiac aneurysm the function of the graft would be to supplement the myocardial blood-supply sufficiently to make a second occlusion less serious, and anastomosis with the sac of the aneurysm should serve as a protection against perforation

On theoretical grounds a graft might be of special service in the case of cardiac ischæmia resulting from an established *syphilitic aortitis*, for here, as has been already mentioned, all the natural processes of compensation are at a disadvantage and there is a normal peripheral tree into which the new blood-supply can be fed

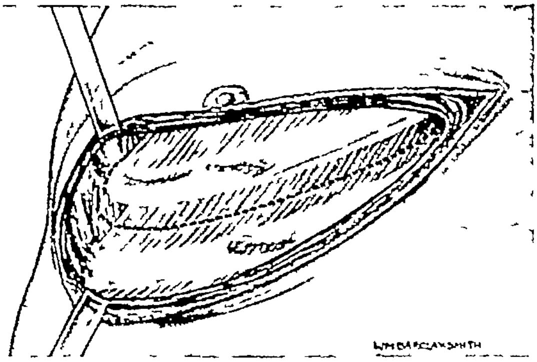

FIG 8—Division of costal cartilages

The provision of an additional blood supply to a heart with *diffuse atheroma of the coronary tree* but no gross obstruction has attractive possibilities It has been demonstrated by Büchner in several fatal cases of hypertensive heart failure that an electrocardiogram characteristic of ischæmia was associated with diffuse areas of necrosis in the heart after death, and for such patients an additional blood supply should be beneficial.

INDICATIONS

It will be seen that the indications for cardio-omentopexy are not yet rigidly defined. They will be more fully described in a future paper by the medical staff of the Lambeth Cardiovascular Clinic, and here only a provisional outline will be given. We have been guided in each individual case by two considerations In the first place we have demanded unequivocal evidence of cardiac ischæmia, and we have then proceeded to an intervention only when we have been satisfied that its immediate risks were less than the patient must in any event run if his disease pursued its natural course These points may be illustrated by reference to some of the patients submitted to operation In Case 1, for example, the patient had had a coronary thrombosis a year previously and he was left with such serious angina of effort that he had to stay in hospital. It seemed clear that the effect of a second occlusion would prove very serious and probably fatal. In Case 3 the patient who had hypertension, suffered a coronary thrombosis, and in spite of rest and medical measures was eventually left with pulsus alternans, a gallop rhythm, and inability to rest lying down. It was unlikely that she would react favourably to another vascular crisis and her cardiac blood supply was therefore augmented by surgical means In Case 5 we had evidence on the electrocardiogram of gross myocardial degeneration (Fig 7), the patient had been bedridden for over a year and angina appeared on the slightest exertion Here too it seemed that further occlusion of the coronary tree would have serious consequences, which might be alleviated by a graft, and while it seemed unlikely that the well established pathological changes in the conduction system could be modified it seemed worth improving the nutrition of her still functioning myocardium

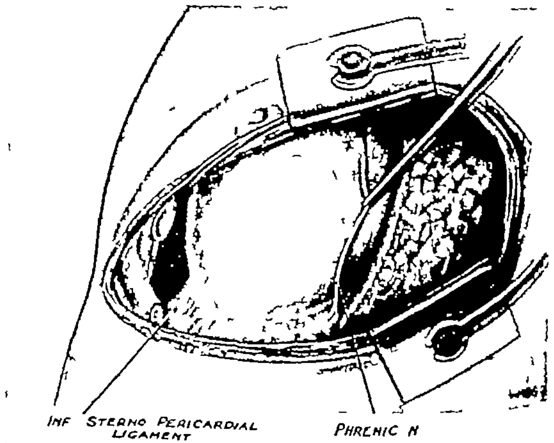

FIG 9—Exposure of pericardium and crushing of phrenic nerve.

TECHNIQUE

After suitable premedication, general anæsthesia is induced and maintained with the Tiegel Henle apparatus, which supplies oxygen under positive pressure together with vaporised ether With the patient on his back, the chest is entered through an incision along the fifth intercostal space which extends from the midline to the anterior axillary line The fifth and sixth costal cartilages are divided near the sternum after the manner of Kirschner (Fig 8) and by the use of a large Sauerbruch intercostal retractor the pericardium is exposed (Fig 9) The phrenic nerve is identified and crushed with a hæmostat and once this has been done the pressure in the anæsthetic apparatus is reduced (from 10 to 6 cm of water) and the table is tilted to the right As a result of these manœuvres the left leaf of the diaphragm appears in the operation field and after the insertion of two sutures the muscle is incised (Fig 10) The abdomen is then explored through the diaphragmatic incision a suitable portion of the omentum is obtained and brought through into the chest. The wound in the diaphragm is then closed by suture (Fig 11) The table is brought back to its original position the degree of inflation of the lung is again increased and the heart covered by the pericardium is once more in view With caution the pericardium is incised (Fig 12) and the graft is attached to the surface of the heart and to the edges of the pericardium by suture with fine linen thread (Fig 13) Finally the chest wound is closed in layers in the usual way (Fig 14) The appearance of the healed incision is illustrated in Fig 15 (Case 4)

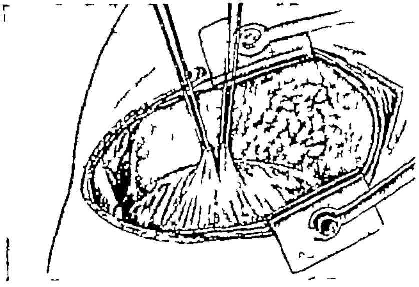

FIG. 10.—Incision through diaphragm

CASE HISTORIES

CASE 1 —A man aged 64 was suffering from angina pectoris dating from an acute illness diagnosed as coronary thrombosis for which he had been treated in a voluntary hospital Dr G W Pickering kindly saw the patient and confirmed the diagnosis of angina of effort On Jan 4th 1930 at Lewisham Hospital cardio-omentopexy was performed with the assistance of Dr Humphrey Nockolds and Mr A Simpson Smith, under general anæsthesia given by Dr Hasler There was no post-operative shock an hour after operation the blood pressure was 130 the pulse-rate 84 the respirations 24 and the temperature normal. No special cause for anxiety arose until Jan 10th when there was a severe melæna with collapse Transfusion was contemplated but not carried out and a second severe hæmorrhage on Jan 12th proved rapidly fatal At autopsy the source of the hæmorrhage was found to be a large chronic duodenal ulcer the colon and other abdominal viscera were normal. All was in order in the operation area and there was evidence of cardiac ischæmia especially of the right heart

CASE 2 —A man aged 65 a cosmopolitan of varying occupations. Angina pectoris for four years nine attacks in all Last attack on July 6th 1930 lasted four hours and was not relieved by amyl nitrite Admitted on the following day to St Stephen's Hospital (L C C), and transferred to the clinic on July 28th He was a heavy smoker until three years ago He gave a history of malaria and three laparotomies—for appendicitis adhesions and gastro-enterostomy A paternal uncle had dropped dead of angina Examination: slight tortuosity of radial artery heart normal clinically but enlarged radiographically; B P (blood pressure) 110/72; blood urea 32 mg per 100 c cm Wassermann reaction negative Electrocardiogram showed ST interval raised in leads II and III.

Cardio-omentopexy was performed at Lambeth Hospital on August 17th 1930 with the assistance of Mr F Watson and Dr P Berry under general anæsthesia given by Dr Hasler No difficulty in obtaining omentum in spite of previous laparotomies Pulse rate at the end of operation 96 Recovery was uneventful except for an immediate mild bronchitis He was kept in bed for 4 weeks and took his discharge on Dec 11th 16½ weeks after operation free of symptoms except slight breathlessness on exertion He had no more attacks of angina, his pulse improved in volume his blood pressure rose gradually to 160/90 and there were progressive changes in the electrocardiogram Slight movement of the left diaphragm were observed on the screen for first time 14 weeks after operation

CASE 3 —A man aged 71 retired from Burma police Angina pectoris for 2–3 years Attacks now almost daily related to exertion emotion or nightmare and relieved by tablets of nitroglycerin He was referred to the clinic by Dr Dean Pollard of Bedford and was admitted on July 27th 1930 Examination: oral sepsis, radial arterio-sclerosis heart enlarged clinically and radiographically; B P 205/105; blood urea 44 mg per 100 c.cm.; Wassermann reaction negative; electrocardiogram showed left ventricular preponderance T wave negative in lead I and ST interval depressed in lead I and *raised in lead III*

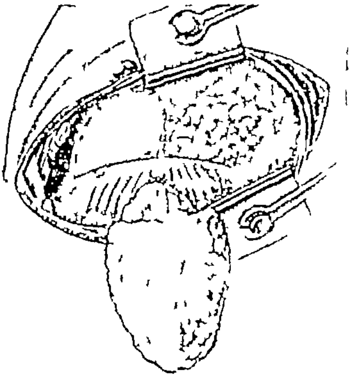

FIG. 11 —The graft drawn through the opening in the diaphragm

Cardio-omentopexy was performed at Lambeth Hospital on Sept 25th 1930 with the assistance of Dr H I Mansell and Dr W K Targett under general anæsthesia given by Dr Hasler Pericardium found stretched over an obviously hypertrophied heart At the end of operation the pulse-rate was 72 the B P [illegible] and the electrocardiogram showed no change After purulent bronchitis for a week recovery was uneventful Three anginal attacks occurred during first 3 weeks and none subsequently He was allowed up 4 weeks after operation and was discharged home at his own request 10 days later The electrocardiogram still showed no change For 4 weeks at home he showed progressive improvement with increasing activity and freedom from pain Symptoms of uræmia then appeared; he was readmitted a fortnight later and

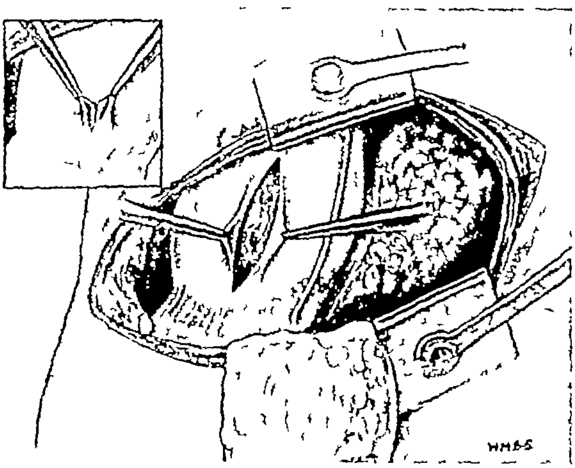

FIG 12 —Incision of pericardium

died on Dec 28th, three months after operation On readmission there was no evidence of heart failure and no anginal pain, in spite of violent hyperpnœa in Cheyne Stokes breathing The B P was 140/100, and the electro cardiogram showed considerable increase in voltage The blood urea was 116 mg per 100 c cm

Post-mortem findings—The abdomen contained an excess of free fluid, but the viscera, including the colon, were normal, and the graft could be seen in place passing through the diaphragm The kidneys showed chronic interstitial nephritis, and there was advanced atheroma of the abdominal aorta The wound in the chest wall was firmly healed and there had been complete restitution of the thoracic cage The right pleura contained free fluid in excess but the lung was normal The lower lobe of the left lung was collapsed, and there was atrophy of the left leaf of the diaphragm The graft was firmly attached to the heart, and after removal of the viscera injection of a watery suspension of Indian ink was carried out from the abdominal aorta A pressure of 100 mm Hg was employed, and the technique was identical with that used in the experimental series (Fig 1) A very profuse injection of the parietal pericardium was obtained, and ink eventually reached the chambers of the heart The specimen was fixed in formalin, and on section it was possible to see the ink lying in the myocardium There was diffuse fibrosis throughout the heart but time has not allowed of complete histological examination

CASE 4 —A woman, aged 44, a paper seller Admitted to Lambeth Hospital on March 5th, 1936, with the story that she had collapsed in the street five weeks before with pain under the heart She took to her bed for three days She had been breathless on exertion for a fortnight before the attack, and had since noticed increasing cough and breathlessness and a "stitch in the heart on hurrying" Findings on admission afebrile, cya and dyspnœic, gross oral sepsis, heart enlarged tachycardia and gallop rhythm, B P 200/140, râles, liver palpable, no œdema, electrocardi showed inversion of T wave in all leads, Wasser reaction negative A diagnosis of coronary thron and hypertension was made

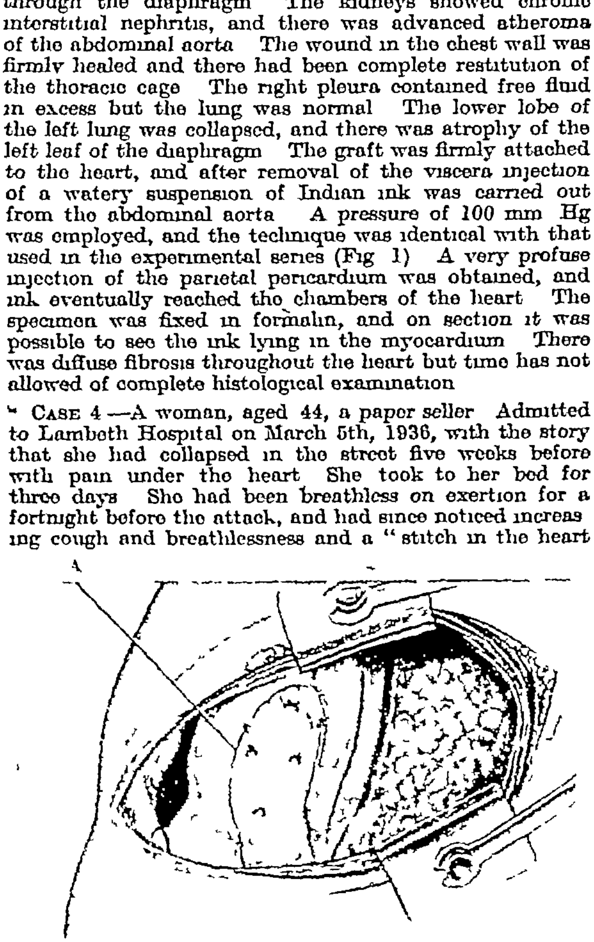

FIG 13 —The graft sutured to the pericardium (A = cut edge

In spite of rest in bed progressive heart failure o and on July 10th, four months after admission, exa tion showed heart grossly enlarged clinically and graphically, gallop rhythm unchanged, B.P 170 venous blood pressure 270/280 mm of saline, basal and a small pleural effusion on left side, liver enlarged, ascites, much œdema of legs and l region, inversion of T wave of electrocardiogram as b From this date she gradually improved The abd was tapped twice, and caffeine, digitalis, and Sal were administered In September all her teeth extracted. On Oct 1st, seven months after adm she was up two hours daily, and symptom free exce slight dyspnœa on exertion Gums well healed, not enlarged clinically, a radiogram showing rema decrease in its transverse diameter, gallop rh unchanged, definite pulsus alternans, confirme sphygmomanometer, B P 210–190/120, venous pressure 160–165, pleural rub at left base, b

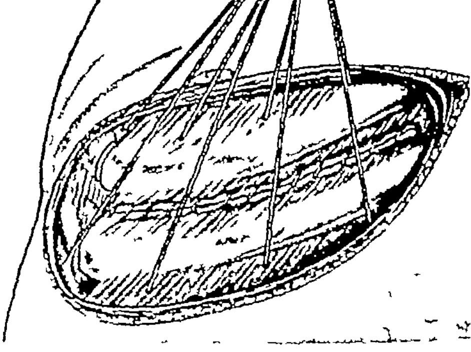

FIG 14 —Closure of chest wound

râles, liver edge just palpable, no ascites or œd increase of voltage and less inversion of T wa electrocardiogram

Cardio omentopexy was performed at Lambeth Ho on Oct 2nd, 1936, with the assistance of Dr Mansel Dr W H. Gabb under general anæsthesia by Dr H Aleuronat injected into pericardium At the end o operation the pulse rate varied from 100 to 120, B P was 104/80, and the electrocardiogram showe change Recovery was uneventful Four weeks operation the heart sounds had improved in tone, was no gallop rhythm or pulsus alternans, and B P had recovered to 150/90 The electrocardio showed progressive changes towards preponderan the left ventricle She is now up for several daily and free of symptoms Fig 15 shows the h incision

CASE 5 —A missionary's widow, aged 65, who ha a strenuous life for many years in high altitudes A pectoris for twelve years Attacks had become frequent and more severe, and she had been almost fined to bed for over 18 months, being now unable to wash herself A sister has angina She was ref to the clinic by Dr L Lyne of Hove and was adm on Oct 1st Examination very obese, heart enl to anterior axillary line soft aortic systolic mu and very short diastolic whiff, radiogram confi cardiac enlargement, B P 247/117, no œdema, ele cardiogram showed complete bundle branch block large amplitude of Q R S complexes in leads I and

After ten days' treatment with general massage st free diet, and administration cardio-omentopexy was performed at Lambeth Hospital on Oct. 16th 1936 with the assistance of Dr Mansell and Dr Berry under general anæsthesia by Dr Hasler Aleuronat was injected into the pericardial sac and at the site of graft At the end of operation the pulse rate was 69 the B.P 170/90 and the electrocardiogram showed no change Recovery was interrupted by a paroxysm of auricular fibrillation, which began 30 hours after operation and ceased spontaneously 0½ hours later There were two anginal attacks during the first fortnight and none subsequently General massage was begun after five weeks and she was allowed to wash herself In six weeks the blood pressure had returned to 240/112 and was causing symptoms She is now getting up daily for 1–2 hours and has kept free of angina. On a balanced diet the blood pressure has fallen to 210/120 Physical signs of pulmonary collapse have been present at the left base since operation. The electrocardiogram shows no change

CASE 6 (Mr George Mason)—A man aged 63 had suffered from angina for some years He was finally reduced to a state in which walking the length of the ward brought on a severe attack. He was investigated and referred for operation by Dr W G A. Swan On Nov 4th 1936 cardio-omentopexy was performed at the Newcastle General Hospital by Mr Mason with my assistance under general anæsthesia by Dr Philip Ayre There was no post-operative shock and recovery was uneventful

POST OPERATIVE COURSE

In no case has there been any immediate anxiety either during the operation or in the post operative period.

It was clearly essential before contemplating a major operation on the type of patient who suffers from cardiac ischæmia that it should be conducted without disturbance of the normal physiology of the chest and also that shock should be eliminated The first essential was secured by the use of oxygen under positive pressure so that transpleural exploration of the heart could be accomplished without disturbance The elimination of surgical shock was attained in the first place by skilful anæsthesia and secondly by the application of some work on traumatic shock by Slome and myself (1935) in the laboratories of the Royal College of Surgeons We showed that only *two factors were concerned in the ætiology* of shock—namely fluid loss at the time of trauma and nervous impulses generated in the traumatised area and transmitted for some considerable period after the trauma had been inflicted In the operation of cardio-omentopexy an approach is used which permits of an almost bloodless exposure of the heart No large vessels are divided and immediate hæmostasis of any smaller vessels encountered is easily possible—and of greater importance is the fact that the phrenic nerve the main sensory nerve of the region can be immediately blocked so that nociceptive impulses cannot ascend it either during the operation or in the days following

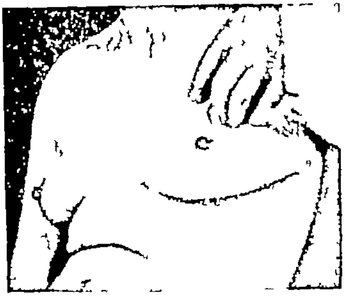

FIG 15 (Case 4)—The incision

THE IMMEDIATE RESULTS

It is the purpose of this lecture to demonstrate that cardio omentopexy is a feasible operation attended with a low immediate mortality A subsequent and detailed report will be published by the medical staff of the Lambeth Cardiovascular Clinic on the after history of the patients submitted to it According to our experimental evidence although vascular connexions are present and demonstrable in three weeks vascularisation increases with time and does not attain its greatest development for at least a year

Our immediate results may be summarised as follows Patient No 1 died of a hæmorrhage from a chronic duodenal ulcer a week after operation No 2 has left hospital in apparently good order No 3 has now a normal pulse can sleep lying down and has a normal degree of activity No 4 had a period of relief from his angina of effort but died of uræmia three months after his operation. No 5 has already gained a degree of activity forbidden her previously by her anginal seizures No 6 has left hospital in excellent condition and his progress will be reported by Mr Mason

Post-operative complications have not been observed in our present series. A temporary paresis of the diaphragm is naturally associated with some degree *of collapse of the lower lobe of the left lung but this* does not seem to be of any great significance and indeed most of our patients have shown signs of renewed diaphragmatic activity three months from the operation full activity should not be longer delayed than six months There has been no case of diaphragmatic hernia the omentum is of course the natural agent for the repair of wounds in the diaphragm—an excellent specimen No 1160 (war collection) in the museum of the Royal College of Surgeons, illustrates this point—and though I have transplanted omentum into the chest of at least 160 animals in the past six years a diaphragmatic hernia has developed in only one of these.

Before concluding this lecture I should like to discuss the alternative operation devised by Beck in which a pedicled graft of the pectoralis major muscle is sutured to the heart Beck has the distinction of being the first surgeon to attempt the direct relief of cardiac ischæmia and with considerable success—in one of his early cases the patient resumed work as a gardener His operation according to the latest figures (August 1936) has six survivors There have been five immediate deaths all in cases with very advanced coronary sclerosis; one from thrombosis of the abdominal aorta one from thrombosis of the middle cerebral artery one from mediastinitis one from a coronary attack and one presumably from heart failure Beck suggests that the comparatively high incidence of post operative thrombosis may be related to the extensive dissection of the pectoral muscle necessary in the preliminary stages of his operation. From my experience of the Brauer operation for mediastino-pericarditis which requires a similar exposure I do not feel that the factors producing post-operative shock can be so well controlled in Beck's operation as in cardio-omentopexy In my hands at least it would be a more serious operation and for this reason, apart altogether from the obvious advantages of the omentum over muscle as a vascularising agent, we have not used it in the Lambeth clinic

Summary and Conclusion

The pathology of cardiac ischæmia has been reviewed, the natural processes of repair have been described, and some account has been given of experimental methods of initiating and supplementing these processes In the Lambeth Cardiovascular Clinic we have established that cardio omentopexy can be performed without immediate disturbance even in a type of patient ill suited to most surgical procedures , our patients have included a man aged 72 and a bedridden woman of 65 There has been no post operative shock and the only immediate death (7 days after operation) was due to a cause unrelated to the cardiovascular system The graft fulfils the immediate function of supplementing the blood-supply to that portion of the myocardium still capable of activity, it prevents further necrosis of any area so ischæmic as to have lost its active function, and it should in some measure act as an insurance against any further obliteration of the coronary tree

I have many acknowledgments to make to the Medical Research Council, who have enabled me to do this work , to the council of the Royal College of Surgeons, who have provided facilities both at Downe and in London , to Sir Arthur Keith and Dr John Beattie, under whose direction the experimental work has been conducted , and to Mr F Watson, senior technical assistant at the Buckston Browne Farm, for his invaluable assistance and advice

I also owe acknowledgment in this as in all my work to Prof Ferdinand Sauerbruch, whose disciple I have been since 1931

I am indebted to Sir Frederick Menzies, medical officer of health of the London County Council, and to the medical superintendents and pathologists of Lewisham Hospital and St James's Hospital for the clinical and pathological facilities afforded me since 1932 The Lambeth Cardiovascular Clinic owes special acknowledgment to Dr P J Watkin, medical superintendent of Lambeth Hospital, and Mr G F Stebbing, surgical consultant, for the ready solution of many administrative and clinical problems and I am personally most grateful to Lord Dawson for his introduction to this lecture and for his stimulating criticism and advice from the earliest stages of the work

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IS *p*-AMINOBENZENESULPHONAMIDE THE ACTIVE AGENT IN PRONTOSIL THERAPY?

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BOTH Prontosil and *p* aminobenzenesulphonamide (sulphanilamide) have a protective action against infection by hæmolytic streptococci Colebrook, Buttle, and O'Meara (1936) have shown that whereas sulphanilamide has a directly inhibitory action on the bacteria in vitro, prontosil has no such action The hypothesis has been advanced by Tréfouel and others (1935) that prontosil itself has no antibacterial action but is effective only when reduced to sulphanilamide in the body The following work is an attempt to discover whether sufficient sulphanilamide is produced in prontosil treated animals to account for the protective action obtained

Sisley and Porcher (1911) have shown that while azo dyes, for example chrysoidine, given by mouth are reduced to the corresponding amines, azo dyes administered subcutaneously are not so reduced. Kellner (1936) found that in the rabbit only 22 per cent of injected prontosil was recovered from the urine The urine contained no sulphanilamide, but it reduced Fehling's solution, from which he inferred the presence of the partially reduced hydrazo compound When prontosil was given by mouth to dogs, rabbits, and humans, the urine after diazotising and coupling with β naphthol showed an increased red colour, taken by Kellner to indicate the presence of sulphanilamide This evidence is not very satisfactory, for the prontosil Kellner used itself shows an increased colour when diazotised and coupled with β naphthol

Prontosil is active when given by injection or by mouth It is therefore necessary to show the production of sulphanilamide from both injected and orally administered prontosil. In the following work, prontosil and sulphanilamide estimations have been made on the urine of patients receiving prontosil by mouth and by injection, and on the urine of both normal and infected mice after prontosil injection. Sulphanilamide has been found in significant amount in all cases, and in addition has been isolated from the urine of a prontosil treated patient

The two varieties of prontosil used by Colebrook and Kenny (1936) were used in the following experiments Although both have a curative action there are differences between them which it is necessary to explain

One variety, " Prontosil," is 4 sulphamido 2 4-diaminoazobenzene hydrochloride It is sparingly soluble, dissolving in 1600 parts of slightly acid water and in 20,000 parts of slightly alkaline water It is therefore excreted very slowly a large dose still colouring the urine weeks after administering It has a stronger colour in acid than in alkaline solution and may be diazotised and coupled to give a more intensely coloured dye When it is reduced it gives sulphanilamide and tri amino benzene This latter compound is unstable and is almost certainly destroyed in the body

The other variety Soluble Prontosil the sodium salt of 4 sulphamido phenyl 2 azo 7 acetylamino 1 hydroxy naphthalene 3 6-disulphonic acid, is soluble up to 4 per cent in water It is rapidly excreted practically all in the first few hours after a dose It gives a much deeper colour in alkaline solution than in acid solution and cannot be further diazotised. Reduction of this prontosil yields sulphanilamide together with 2 amino-7-acetylamino 1 hydroxy naphthalene 3 6-disulphonic acid. This does not give the diazo reaction, but does so after acid hydrolysis

METHODS OF ESTIMATION

Either variety of prontosil may be estimated by comparing the colour of the urine with that of a solution of the corresponding prontosil of known strength and the same pH Soluble prontosil can be estimated in the presence of prontosil in strongly alkaline solution when the colour of the second is negligible compared with that of the first but no method has been found of estimating the second when the first is present Sulphanilamide estimations were made by first removing the prontosil by boiling the strongly acidified urine with charcoal cooling to 0 C adding excess of sodium nitrite solution and after a few minutes adding alkaline β naphthol and caustic soda. The red solution thus obtained was then compared in the colorimeter with that obtained in the same way from a solution of sulphanilamide of known strength This reaction the diazo reaction is given by sulphanilamide by reason of its amino group attached to the benzene ring and is not specific for that compound, but normal urines and blood filtrates do not give the reaction

Soluble prontosil was reduced both by stannous chloride and by sodium hydrosulphite and the amino acetylamino naphthol-disulphonic acid separated by acidifying and saturating with salt This compound did not give the diazo reaction being decomposed by the nitrous acid [1]

Sulphanilamide is excreted partly in a conjugated form and the total sulphanilamide was obtained by boiling the decolorised urine in N hydrochloric acid for 15 minutes before diazotising The sulphonic acid produced by the reduction of the soluble prontosil is also hydrolysed by the acid and then gives the diazo reaction

Sulphanilamide may be estimated in blood by the following method

One c cm of blood is laked with 2 c cm of water 1 c cm of 20 per cent trichloracetic acid added and the blood filtered at the pump The filtrate is cooled in ice and one drop of 0·5 per cent sodium nitrite added Equal volumes of standard solutions of sulphanilamide in acid are treated similarly After a few minutes one drop of 1 per cent alkaline thymol and 0·2 c.cm. of 40 per cent caustic soda are added to all tubes and the blood filtrate is compared in the colorimeter against the appropriate standard

This method has been found to give a fairly accurate determination of sulphanilamide added to normal blood down to a concentration of 1 mg per 100 c cm

PRONTOSIL AND SULPHANILAMIDE IN THE URINE AND BLOOD AFTER ORAL PRONTOSIL

Determinations were made on many samples of urine from patients who had received prontosil by mouth and soluble prontosil by injection A few are given in Table I below Corrections have been made for the presence of two kinds of prontosil, and of interfering substances after hydrolysis Sulphanilamide is produced from 1 0 times its weight of prontosil and 3 3 times its weight of soluble prontosil and so in the last column the figures have been multiplied by 2 6 to give the approximate prontosil equivalent of the sulphanilamide excreted.

TABLE I

Patient	Date	Prontosil in urine (%)	Sulphanilamide in urine (%)	Prontosil equivalent of sulphanilamide (%)
Mrs. B	Aug 10th	0 15	0 15	0 39
	" 11th	0·05	0 15	0 39
Mrs. S	10th	0·05	0 12	0 31
	12th	0 13	0 14	0·36
Mrs D	12th	0 15	0·08	0·21

These figures show that up to 75 per cent of the excreted prontosil was in the reduced form

The total three days urine of Mrs G was assayed at frequent intervals during which time she received 4 8 g of prontosil by mouth and 3 g of soluble prontosil by injection A total of 0 8 g of soluble prontosil was found in the urine If we assume that an equal amount of prontosil was excreted (certainly an over-estimate owing to the much slower excretion of this substance) a total of 1 6 g of prontosil is obtained The free sulphanilamide was 0 30 g and the combined was 0 47 g If we assume that half this combined sulphanilamide was really another substance we get a total sulphanilamide of 0 6 g If this is multiplied by 2 6 a prontosil equivalent of 1 6 g is obtained In other words at least half the excreted prontosil was in the reduced form

Sulphanilamide does not appear in the urine until 4–6 hours after the first dose of prontosil

Isolation of sulphanilamide from patient's urine—The final proof of the presence of sulphanilamide was obtained by isolating the substance from the urine in the following way

The urine was acidified and decolorised and the sulphanilamide precipitated as a mercury salt which was removed and decomposed with hydrogen sulphide The mercury free solution was evaporated to dryness, and the sulphanilamide separated from other substances by repeated extractions with acetone It was finally purified by crystallising three times from water It then melted at 162–3 C A sample of sulphanilamide and a mixture of this with the recovered substance also melted at 162–3 C. showing that the two substances were identical The acetyl compounds from both melted at 214–5 C

TABLE II

Day of treatment	Sulphanilamide in blood (mg per 100 c cm)
1st	0 93
2nd	2 [illegible]
3rd	3 7

Sulphanilamide in the blood of a prontosil treated patient—Sulphanilamide was found in the blood of the one patient tested The concentrations are given in Table II, and are of the same order as those in the blood of sulphanilamide treated patients (1 0 to 4 0 mg per 100 c cm)

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[1] Other amino naphthol-sulphonic acids were prepared and some of them failed to give the diazo reaction, particularly those in which the amino and hydroxyl groups were in adjacent positions in the ring as in the compound under consideration

Excretion of orally administered sulphanilamide —Table III gives the amounts of free and total sulphanilamide in the urine of patients receiving this drug by mouth, and is included to show that humans excrete about half the total in a conjugated form (average figure, 55 per cent)

TABLE III

Patient	Date.	Sulphanilamide in urine (per cent)	
		Free	Total
Mrs F	Oct 12th	0 105	0 222
Mrs L	Nov 30th	0 018	0·037
Mrs B	Dec 18th	0 147	0 322
Mrs G	„ 29th	0 095	0 222

EXCRETION OF PRONTOSIL AND SULPHANILAMIDE BY MICE

The mice were kept in groups of ten in a metabolism cage, and the urine was collected in a tube cooled in ice contained in a vacuum flask The urines were removed at intervals for analysis The prontosil and sulphanilamide were estimated as previously described The infected groups were given 0 00003 c cm of a virulent culture of Group A hæmolytic streptococci, Richards, intraperitoneally, and received their first dose of drug subcutaneously two hours later The normal mice received one dose of drug per day, and the infected groups two injections on the first day and one on succeeding days Controls were given the same dose of streptococci but no drug

The experiments were usually allowed to continue for two days The mice were then transferred to their boxes, and the survival of the infected mice noted

(*a*) *Excretion of sulphanilamide* —A preliminary experiment was done on the excretion of subcutaneously administered sulphanilamide by mice Table IV gives the results obtained with normal and infected animals Details have been left out of the Table, which gives the total amounts received and excreted per mouse during the 48 hours of the experiment, the rates of excretion of the sulphanilamide are discussed in a later section

TABLE IV

Mice	Sulphanilamide injected (mg)	Sulphanilamide excreted		Per cent of injected
		Free (mg)	Total (mg)	
Normal	15	6 1	9 6	65
„	7 5	2 9	4 9	65
Infected	22 5	6 1	10 3	46

It will be seen that two thirds of the sulphanilamide injected was recovered from the normal mice and half from the infected mice In both cases 61 per cent of the sulphanilamide was excreted in the free state The concentrations of free sulphanilamide in the urine varied from 0 13 per cent to 0 40 per cent

(*b*) *Excretion of soluble prontosil* —Table V shows the total amount of prontosil injected, and the average quantity of soluble prontosil and sulphanilamide excreted per mouse during 48 hours

TABLE V

Mice.	Soluble prontosil		Sulphanilamide excreted	
	Injected (mg)	Excreted (mg)	Free.	Total*
Normal— Group 1	25	9 4		
„ 2	30	10 8	1 15	2 56
„ 3	15	6 1	1 12	1 44
Total	70	26 3	2 27	4·00
Infected— Group 1	22 5	2 0	1 17	1 51
„ 2	30	8 4	1 03	3 19
„ 3	22 5	3 9	0 87	1 14
Total	75	14 3	3 07	5·84

Unfortunately the total sulphanilamide cannot be found accurately for the figures include a fraction due to another substance liberated by the acid hydrolysis

If it is assumed that as in the sulphanilamide experiment 61 per cent of the total sulphanilamide is excreted free, the corrected total excretion in the normal and infected groups would be 3 7 and 5·0 mg. respectively However, a larger correction is made, on the assumption that half the combined sulphanilamide is due to interfering substances This reduces the total sulphanilamide to 3 1 and 4 4 mg respectively These figures have now to be multiplied by 3 3 to give the amount of soluble prontosil excreted in the reduced form To obtain the quantity of prontosil reduced to secure this excretion, a further correction must be applied to allow for the fact that only 65 per cent and 46 per cent of administered sulphanilamide was recovered from normal and infected mice respectively, under the same conditions. Table VI gives the results expressed as percentages of the prontosil administered

TABLE VI

Mice	Soluble prontosil excreted		Soluble prontosil.	
	Unchanged (%)	In reduced form (%)	Unaccounted for (%)	Reduced (%).
Normal	37 5	13 5	49	2°
Infected	19 1	19 6	61 3	42

Thus, while the normal groups excreted nearly three times as much unchanged as reduced prontosil, the infected groups excreted approximately equal amounts of each In the latter case, 42 per cent of the injected soluble prontosil must have been reduced to obtain this excretion

The prontosil was eliminated rapidly from the normal mice, the urine containing up to 1 2 per cent in the first 4 hours, and only a trace 8–24 hours after a dose The excretion was slower in infected animals, the urine containing only 0 1 to 0 2 per cent during the first 4 hours, but later increasing in concentration Only traces of sulphanilamide were excreted during the first 4 hours the greatest quantity appearing 8–24 hours after the dose, when the excretion of prontosil had almost ceased

(*c*) *Excretion of prontosil* —One group of mice had three doses of prontosil totalling 22 5 mg suspended in gum saline during the first two days Urine was collected for 5 days and the results are given in Table VII

TABLE VII

Day	Prontosil excreted (mg)	Sulphanilamide excreted (mg)
1st	0·40	0·0 2
2nd	0·44	0·070
3rd	0·20	0·050
4th	0·16	0·035
5th	0·11	0·043
Total	1·30	0·270

In Table VIII the above sulphanilamide figures have been converted to prontosil, and expressed as percentages of the prontosil given Again it is assumed that the sulphanilamide excreted is only 65 per cent of the amount actually produced

TABLE VIII

Prontosil excreted		Prontosil reduced (%)	Prontosil not accounted for (%)
Unchanged (%)	In reduced form (%)		
5·8	3·3	3·5	90·7

It should be noted that no combined sulphanilamide was found in this experiment In fact a decreased sulphanilamide reaction was obtained after heating with acid This is due to decomposition which owing to the very dilute solutions concerned (1 in 13 000 to 1 in 35 000) more than balanced the increase due to hydrolysis

These figures show the great difference in behaviour between the two prontosils A moderate dose of soluble prontosil is practically completely excreted in 6 hours Only a small fraction of the same dose of prontosil is excreted in 5 days It is interesting to note that the ratio of prontosil to sulphanilamide excreted by normal mice is about the same for both prontosils although the insoluble prontosil is retained in the body for a much longer time This may mean that the reduction is not caused by simple contact with the tissues

In this connexion it was noticed that the stomach contents of a mouse killed 1½ hours after the injection of soluble prontosil were deeply stained red while the rest of the body seemed free from dye A mouse killed 3 hours after injection had a normal stomach, but the contents of the small intestine were stained red It is possible that the prontosil is reduced in this way in the intestine after absorption into the stomach This would account for the delay in its excretion in prontosil treated animals and agrees with the work of Sisley and Porcher (1911)

DISCUSSION

In normal animals 35 per cent of injected sulphanilamide and 49 per cent of soluble prontosil are not accounted for This is due partly to slight losses during collection and a more complete recovery would have resulted if the urine had been collected for a longer period Only small amounts were found in the body and fæces A part of these drugs is undoubtedly destroyed in the body In the case of insoluble prontosil, 90 per cent was not recovered but a large part of this was left behind in the body staining the tissues an orange colour and excretion was still taking place at the conclusion of the experiment

In infected animals the discrepancies were greater Fifty four per cent of injected sulphanilamide and 61 per cent of soluble prontosil was not accounted for This may be due to retention by the inflamed tissues, or to impairment of kidney function

The infected groups receiving prontosil excreted more sulphanilamide than did the normal groups The question is whether enough sulphanilamide was produced to account for the therapeutic action of prontosil.

In the soluble prontosil experiment equivalent amounts of prontosil and sulphanilamide were excreted and evidence suggests that half the injected prontosil was reduced. Where oral prontosil was also given to patients a still larger proportion was converted to sulphanilamide Allowing for the threefold difference in molecular weights if sulphanilamide is the active agent in prontosil therapy it should be six times as efficient weight for weight as soluble prontosil. This ratio will be affected if there is any great difference in the rates of elimination of sulphanilamide from sulphanilamide treated and prontosil-treated animals

The rates at which normal mice excrete sulphanilamide given by injection and derived from prontosil are given in Table IX

TABLE IX

Drug given	Amount injected in 4 hours (mg)	Per cent. of 24 hour excretion passed in—	
		0–4 hours	0–8 hours
Sulphanilamide	7 5	43	68
"	3 75	44	74
Soluble prontosil	(1·0) (produced)	3	13

It will be seen that the smaller the injected dose the more rapidly is the sulphanilamide excreted and probably the 1 mg produced in the prontosil experiment would be still more quickly eliminated than the 3 75 mg dose if it had been injected Without making allowance for this three quarters of the 24 hourly excretion of injected sulphanilamide has been passed in 8 hours compared with only one eighth of that derived from prontosil If the body can make more use of the steady supply of sulphanilamide from prontosil than of the sudden flood of injected drug this would make prontosil relatively more effective Further discussion is useless without knowledge of the relative efficiencies of the prontosils and sulphanilamide in curing hæmolytic streptococcal disease and this is a problem involving large-scale work both with animals and patients

In the three groups of ten infected mice (see Table V) receiving an average of 25 mg of soluble prontosil each, 7, 7, and 5 had died by the fifth day Six of the ten mice receiving 22 5 mg of sulphanilamide had died by the fifth day The experiments thus fail to show any great difference between the two drugs, but for adequate protection of the animals many more than the three injections received would have been necessary The four-control mice had died by the second day

If prontosil has more protective power than is accounted for by the sulphanilamide produced from it, this further action must be other than a simple bactericidal one, for prontosil itself has little or no streptococcus killing power

SUMMARY

A considerable amount of sulphanilamide is excreted when prontosil is given by mouth or by injection, and it is possible that the therapeutic action of prontosil is due to the sulphanilamide derived from it by reduction in the body

I wish to thank Dr L Colebrook, director, Bernhard Baron research laboratories for his very real help, and Mr W R Maxted for technical assistance

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MIXED MENINGOCOCCAL AND STREPTOCOCCAL MENINGITIS

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CASES of meningococcal meningitis (cerebro spinal fever) with superadded infection by one or more other organisms have been reported from time to time Extremely rarely the meningococcus is associated with the colon bacillus, *Bacillus pyocyaneus* or Pfeiffer's bacillus More often, though still very rarely, the hæmolytic streptococcus is the offending organism The pneumococcus and the tubercle bacillus are more commonly to be found with the meningococcus and about 50 reported cases belonging to each group were collected by Chalier and Guichard in 1931 Doubtless many others have been noted but not published.

Nothing seems to have been written in this country about the association of meningococci and hæmolytic streptococci in meningitis The streptococci may be secondary invaders in a case of cerebro spinal fever or the two organisms may be associated from the beginning, being found in the first specimen of fluid removed by lumbar puncture In most of the cases recorded the hæmolytic streptococcus has been regarded as the secondary invader

Tessier and Reilly (1920) give an interesting account of streptococcal infection of the meninges—attributed to erysipelas of the face complicating herpes of the lips—which developed about the eighth day of an attack of cerebro spinal fever, which had hitherto responded well to serum therapy The spinal fluid, which was almost clear, became turbid, and hæmolytic streptococci were isolated before death

Collignon and Maisonnet (1910) reported a case in which meningococci were seen on direct microscopical examination of the deposit from the cerebro spinal fluid, but a pure growth of short-chain streptococci was obtained on culture The meningococci were never grown, but the precipitin reaction was positive Although the patient gave a history of otorrhœa there was no evidence of acute or chronic otitis media, no infection of the mastoid was found at operation or post mortem, and in the absence of a definite focus it was presumed that the secondary infection originated in the nasopharynx, the patient having recently had several attacks of quinsy

In Barbier and Lebée's case (1922) death was caused by streptococcal meningitis, the organism being isolated about six days after the onset of the primary meningococcal infection Here again the nasopharynx was regarded as the portal of entry of the streptococcus as also in the case published by Jame, Jude, and Sohier (1932) The latter cultivated meningococcus Type B from the cerebrospinal fluid at the onset of the illness, but four days later, when repeated cultures from the fluid had shown no organisms, a recrudescence of symptoms of meningeal involvement led to further investigation Lumbar puncture produced turbid fluid under pressure and a hæmolytic streptococcus was isolated in pure culture, a hæmolytic streptococcus was also grown from the blood

Morquio (1928) found non hæmolytic streptococci in the cerebro spinal fluid of an infant towards the end of an attack of posterior basal meningitis

If there is no definite suppurative focus of secondary infection it may be hard to prove that the cerebrospinal fluid has not been contaminated from outside —during injection of serum for example This may often have been a reason against the publication of cases of mixed infection

CASE REPORT

A boy aged 11 months was admitted to an L C C. general hospital on Jan 13th, 1936, with follicular tonsillitis and left otitis media For four days before admission he had been continually pulling at his left ear as if in pain, and otorrhœa had begun on the 10th The discharge quickly dried up under treatment, and the child left hospital apparently quite fit on the 22nd, but he had to be readmitted on Feb 17th having had attacks of screaming, without obvious cause, during the previous week, and a recurrence of left ear discharge on the 15th There was active otitis media with profuse otorrhœa but no demonstrable mastoid swelling or tenderness

He remained afebrile till Feb 21st when the morning temperature rose suddenly to 101 4° F and he vomited. The physical signs however, remained unchanged—the temperature fluctuating between 100° and 102° F, with a pulse rate of 150–170 per minute—until Feb 23rd when the aural discharge suddenly ceased and definite stiffness and rigidity of the neck muscles were noted. Lumbar puncture revealed a turbid fluid under pressure and Schwartze's operation was performed on the left mastoid. The mastoid cells were found to be diseased and there was a considerable amount of pus in the left antrum The dura mater bulged on exposure and there was a gush of cerebro spinal fluid when it was incised. but no frank pus was located The child passed a fairly comfortable night and next morning (Feb 24th) the mastoid wound was satisfactory, but the neck muscles were stiffer and the left external rectus of the eye was a little weak. The bacteriological report on the cerebrospinal fluid of Feb 23rd was as follows "Turbid fluid with threads of pus and numerous polymorphs, chlorides 680 mg per 100 c cm globulin greatly increased in amount, a stained film showed numerous Gram negative diplococci plus a few Gram positive cocci, culture on blood agar gave a good growth of meningococci" The pus removed from the left mastoid wound showed hæmolytic streptococci On repeated lumbar puncture 20 c cm. of milky greenish fluid was withdrawn and replaced by 10 c cm of antimeningococcal serum The same amount of serum was given intramuscularly

The child was transferred to the Park Hospital (L C C.) on Feb 25th with a diagnosis of cerebro spinal meningitis. He was pale, poorly nourished, and obviously very ill (temp 100° F, pulse rate 150), though conscious he was extremely irritable and resented examination. There was definite head retraction and Kernig's sign was positive The pupils were circular central, and reacted to light The optic discs were clear and there was no obvious involvement of the cranial nerves. The knee jerks and ankle-jerks were present and equal on both sides but the abdominal reflexes were not elicited and the plantar responses were indefinite Nothing abnormal was found in heart, lungs, or abdomen. A slight purulent discharge was coming from the left mastoid wound, with left otorrhœa but the right ear and mastoid area seemed normal Lumbar puncture gave 25 c cm of very thick turbid C S.F under pressure Meningococcus antitoxin (P D and Co) was injected, 10 c.cm intrathecally and 80 c.cm intravenously Later in the day lumbar puncture was repeated and 30 c.cm. of very turbid fluid was removed and replaced by 15 c cm of serum The fluid showed 56 000 cells per c.mm protein 200 mg per 100 c cm chlorides 670 mg per 100 c cm pus cells and Gram negative diplococci; culture gave a good growth of meningococci Type 2 (Maegraith)

On Feb 26th the general condition was very poor and the neck rigidity and head retraction were if anything worse On cistern puncture 15 c cm of thick gelatinous fluid was removed with great difficulty and a lumbar puncture at the same time gave very similar fluid An attempt was made to irrigate the spinal subarachnoid space with warm isotonic saline solution but continuity could not be established. A further 10 c.cm of serum was given intracisternally and 40 c cm intravenously In the afternoon the right ventricle was explored and 20 c.cm of slightly blood-stained fluid was withdrawn and replaced by 12 c.cm of meningococcus antitoxin As the child's condition became very poor saline irrigation was not carried out The fluid from the right ventricle gave a pure growth of hæmolytic streptococci and the fluid from the cistern grew meningococci This anomalous report led to a closer scrutiny of the blood plates inoculated *from the previous specimens of cerebro-spinal* fluid and colonies of hæmolytic streptococci were found even on the plate inoculated from the first specimen of cerebro spinal fluid obtained on admission The diagnosis of "mixed meningitis now presented itself for the first time and changed the whole complexion of the case

On Feb 27th only 5 c.cm of thick pus could be obtained on cistern puncture but 30 c.cm of very turbid fluid was removed from the left ventricle Since the inefficacy of antistreptococcal serum therapy in streptococcal meningitis is well recognised, meningococcus antitoxin only in a dose of 12 c cm was injected. Irrigation was considered impracticable owing to the extremely poor condition of the child Both cistern and ventricle fluid showed streptococci on direct microscopical examination and hæmolytic streptococci plus meningococci on culture The hæmolytic streptococci now seemed to have gained the ascendancy for the colonies, which at the beginning of the illness were difficult to locate amid the more abundant meningococcal growth now definitely outnumbered the meningococcal colonies Next morning (Feb 28th) the child was comatose; opisthotonos was accompanied by almost continuous convulsive movements of the limbs which were first noticed during the previous night, and which ended in death

Samples of fluid were obtained by ventricle cistern and lumbar puncture and hæmolytic streptococci were found in all three specimens with a less abundant growth of meningococci in the ventricle and cistern fluids only The pus from the left mastoid wound gave a 90 per cent growth of hæmolytic streptococci serologically identical with those isolated from the cerebro spinal fluid which belonged to a rather uncommon group (Type 1.) No growth was obtained from the blood after 48 hours incubation

Post mortem findings will in skull—Much congestion of the vessels of the dura with loss of continuity and evidence of trauma beside the left mastoid. Greenish yellow exudate over the entire surfaces of the cerebral hemispheres and cerebellum, particularly abundant at the base of the brain covering the pons and filling the interpeduncular fossa also opaque areas of purulent exudate scattered over the surface of the temporal lobe on each side Subarachnoid hæmorrhages on the left side of the cerebellum anteriorly the left Rolandic area and the apex of the left occipital lobe Left lateral sinus unaffected Pus in the right middle ear with evidence of spread of infection to the mastoid cells which were broken down and necrotic though the overlying bone was not eroded.

DISCUSSION

The mere presence of an organism in a specimen of cerebro-spinal fluid is not evidence of meningitis the infection has to be proved by repeated bacteriological examination of specimens removed with rigid aseptic precautions This was done in the present case Owing to the preponderance of meningococci in the early specimens the meningococcus can be regarded as the primary invading organism The left mastoid was undoubtedly the source of streptococcal infection, for the hæmolytic streptococcus isolated therefrom was serologically identical with that later obtained from the cerebro-spinal fluid A hæmolytic streptococcus was also isolated post mortem from the right mastoid, but we have no evidence that this contributed to the meningeal infection.

The time of onset of the secondary infection is difficult to determine The presence of acute mastoiditis complicated by purulent meningitis was held to justify immediate operation even before complete bacteriological investigation of the cerebro spinal fluid could be carried out At operation the dura mater was incised in the search for a possible intracranial collection of pus. This incision may have been the path of secondary infection but it is quite likely that the streptococci reached the meninges by *direct extension from the ear* since the cerebro spinal fluid removed before operation showed many Gram negative diplococci with Gram positive cocci In the light of events it is unfortunate that the idea *of a mixed infection was not pursued at that early* stage and that the Gram positive cocci were regarded as contaminants.

One lesson of the case is that if acute mastoiditis is accompanied by signs of meningitis a complete bacteriological examination of the cerebro spinal fluid, obtained under rigid aseptic precautions, must be carried out before any operation is attempted If the meningitis proves to be purely meningococcal spinal drainage with intensive serum therapy (intravenous and intrathecal) is indicated Conservative measures will usually suffice for the treatment of the associated acute mastoiditis. If on the other hand there is a mixed meningeal infection the usual anti meningococcal therapy must be combined with immediate operation on the infected mastoid But unless there is clinical evidence of an intracranial abscess the membranes of the brain should not be opened Antistreptococcus serum appears to be of little or no value in these infections

I wish to thank Dr H S Banks medical superintendent of Park Hospital, for permission to publish the case and I am indebted to Dr J L McCartney director of the Southern Group Laboratory for the bacteriological and pathological findings

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OVERBREATHING TETANY

CHANGES IN THE CALCIUM OF SERUM, SERUM ULTRAFILTRATES, AND CEREBRO SPINAL FLUID

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THE chemical changes both in the blood and urine during overbreathing tetany have been extensively investigated, and recently Barnes and Greaves (1936) have extended their investigations in two cases to include the cerebro spinal fluid (C S F) These authors considered on the basis of certain published work that they were justified in "using the C S F calcium as an index of the diffusible calcium of the blood " The authors stated that they found approximately 0 5 mg per 100 c cm less calcium in the C S F of two patients during an attack of overbreathing tetany than at another, normal (but presumably not immediately preceding), time Their conclusions were that the diffusible calcium of the serum was reduced during overbreathing tetany to a still greater extent

The theoretical assumptions of Barnes and Greaves are not in keeping with modern views of the way in which the C S F is formed The published evidence has been extensively reviewed by Flexner (1934), Gilligan, Volk, and Blumgart (1934), Greenfield (1936), Kral, Stary, and Winternitz (1929), and McCance (1936)—see also Gregory and Andersch (1936)—so that it is unnecessary to discuss the matter again It is enough to point out that it is very improbable that the calcium in the C S F is an index of the diffusible calcium of the serum Nevertheless, the experimental findings of these authors appeared to be so important that it was decided to repeat some of their work under rigid experimental conditions For this purpose two subjects were selected a woman, P Q , aged 34, who suffered from severe attacks of hysterical overbreathing tetany , and a normal woman, M S , aged 28

EXPERIMENTAL PROCEDURE

The experiments were carried out at King's College Hospital After emptying the bladder the subjects sat down on a chair with their arms resting on the back A needle was inserted into the thecal space in the lumbar region 5 c cm of fluid was withdrawn and the needle left in situ Blood was also removed from the antecubital vein with very slight constriction or with none at all and allowed to clot under a 1 in layer of paraffin At no time was the blood in contact with the air until the plasma had been separated The subjects next overbreathed voluntarily When tetany was well established, a second vein puncture was made and a further 5 c cm of spinal fluid removed The subjects were then told to stop overbreathing The patient was unable to do so and carbon dioxide had to be administered to remove the tetany which was most severe and extended to opisthotonos A third vein puncture was made and a final 5 c cm of spinal fluid was removed as soon as the tetany had quite disappeared A second specimen of urine was obtained as soon as possible after the third vein puncture On the next day the serum was separated from the clot and both sera and C S F labelled in cipher and taken at once to Cambridge where the ultrafiltration and all chemical determinations were carried out in duplicate by one of us (Greenberg and Gunther 1929, McCance and Watchorn 1931, Watchorn and McCance 1932)

RESULTS

The protocols of the experiments are given below and the analytical results in the Table It will be observed that tetany began to develop after a period of only 2½–3 mins' overbreathing in the normal subject M S , tetany began to develop after 3½ mins in the patient P Q The serum calcium rose during overbreathing and fell again immediately afterwards This rise is in agreement with the results reported by a number of authors The ultrafiltrable calcium also rose during overbreathing The ratio of the ultrafiltrable to the total calcium remained virtually unchanged in the normal subject. The ratio fell slightly in the patient throughout the whole experiment but was always within normal limits The C S F calcium did not fall during over

Subject M S (normal)

Time P M	
4 23–4 25	First collection of blood under paraffin negligible constriction
4 26½	First urine *p*H 7·0
4 31	First collection of spinal fluid
4 32	Began to overbreathe Respirations 48/min
4 33	Respirations 48/min
4 34	Respirations 54/min Hands trembling pins and needles tetany started
4 35–4 37	Respirations 50 59, and 49/min respectively Tetany severe considerable pain
4 39	Second collection of blood begun
4 40	Stopped overbreathing second collection of spinal fluid
4 41	Second collection of blood completed
4 47	Recovered third collection of blood begun
4 47½	Third collection of spinal fluid
4 49	Third collection of blood completed
4 53	Second urine *p*H 7 5

Subject P Q (patient)

Time A M	
10 25	First collection of blood under paraffin practically without constriction
10 34	First collection of spinal fluid
10 35	Began to overbreathe
10 38½	Pins and needles
10 39	Hands trembling
10 40	Rigid opisthotonos Had to be held on chair
10 41	Second collection of spinal fluid , arms clenched Second vein puncture impossible
10 41½	Commenced to breathe CO_2 O_2 mixture
10 43	Partially relaxed
10 43½	Second collection of blood slight constriction
10 49½	Normal once more still breathing CO_2 O_2 mixture Third collection of fluid
10 56	Third collection of blood

N B —The respirations were not counted but were deeper than those of M S Two specimens of urine were obtained the second not until some time after the main part of the experiment ended and considerable amounts of CO_2 had been breathed. Both were acid and about *p*H 6 5

Chemical Changes produced by Overbreathing

Subject	Serum calcium mg /100 c cm	Ultra filt calcium mg /100 c cm	Ultra filt % of serum calcium	C S F	
				Calcium mg /100 c cm	Inorganic phosphorus mg /100 c cm
P Q (patient)					
Before overbreathing	9 70	6·00	62	4 81	1·68
At height of tetany	10 71	6 16	58	4 74	1 ,4
After recovery	9 99	5 54	55	4 79	1 70
M S (normal)					
Before overbreathing	10 20	5 54	54	4 70	1 81
At height of tetany	10 74	5 95	55	4 81	1 ,9
After recovery	10 30	5 38	52	4 76	1 83

breathing and did not in fact show any significant change The C S F inorganic phosphorus also showed no significant change during overbreathing

DISCUSSION

These results do not confirm those of Barnes and Greaves. An obvious criticism of their results is the fact that they do not seem to have taken their specimens of normal sera and C S F during the main experiment but at some other time

Our results differ from those of Barnes in showing a rise of total serum calcium during overbreathing—not an important difference since the rise is known to be a variable phenomenon—and in the constancy of the C S F calcium The present results conflict with the theoretical conclusions of Barnes and Greaves in the fact that the C S F calcium was considerably below the ultrafiltrable calcium and in that the latter did not fall during overbreathing (Gunther and Greenberg 1931 Herbert 1933)

If the hypothesis of Barnes and Greaves were accepted it might be argued that since no change was found in the C S F none or only a very small one could be expected in the ultrafiltrate Herbert (1933) however and Gregory and Andersch (1936) have shown very convincingly that the C S F calcium does not represent the diffusible serum calcium and that the differences cannot be explained as due to the slow attainment of equilibrium between the C S F and the serum since the differences may be *maintained for many weeks*

The results here reported also indicate that the ease with which tetany can be induced by overbreathing has little diagnostic significance (see protocols) The time at which tetany develops and its severity depend upon the susceptibility of the subject to the alkalosis so produced Thus tetany may not develop clinically until overbreathing has been in progress for some time but cases have been recorded in women after very slight hyperventilation (Barnes and Greaves 1936 McCance 1932) In most of the experiments reported tetany has only developed after 15–45 mins overbreathing but it should be noted that women have seldom been the subjects. It is our experience however that mild tetany can sometimes be produced by 4–5 mins overbreathing even in normal men and it is possible that in women the time required may often only be 2–4 mins. However that may prove to be the present results make it clear that perfectly normal persons may be as susceptible to alkalosis and tetany as those unfortunate people who are liable to attacks of uncontrollable overbreathing and its alarming sequelæ

SUMMARY

Spontaneous overbreathing in women sufficient to cause severe tetany brought about a rise in the serum calcium a small rise in the ultrafiltrable calcium but no change in the cerebro spinal fluid calcium or phosphorus

Susceptibility to alkalosis tetany varies from one person to another and a high degree of susceptibility is quite compatible with a perfectly normal life The ease therefore with which tetany can be induced has no diagnostic significance

We are very grateful to Dr J C. Winterler and Miss E. M Widdowson for their help We are also indebted to the subjects and particularly to M S for her whole-hearted cooperation in an experiment which necessitated spending a fine week-end in bed.

(Continued at foot of next column)

THE CEREBRO SPINAL FLUID IN SPONTANEOUS OVERBREATHING TETANY *

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Recently Barnes and Greaves (1936) have discussed the rôle of calcium in spontaneous overbreathing tetany and have recorded cases in which there was a fall in the cerebro-spinal fluid (C S F) calcium during tetany They suggest that this fall was associated with an alkalosis with consequent lowering of the diffusible calcium of the blood which lowering was immediately reflected in the C S F calcium content The following report gives our findings on two such cases of overbreathing tetany in which the C S F and blood calcium contents were estimated these findings will be shown to disagree with those of Barnes and Greaves.

THE ESTIMATIONS

The two patients were admitted to the National Hospital on Sept. 5th and 4th 1936

Case 1 —A. B a woman aged 32 had had for seven years attacks characterised by an onset with hyperpnœa followed by drawing up of the fingers and loss of voice They lasted several minutes but in none had she been unconscious On examination no signs of organic disease of the nervous system were found.

Case 2 —C D a woman aged 27 years For two years before admission she had suffered from attacks in which she would gradually become stiff in the hands and feet Occasionally the stiffness would be preceded by a tingling in the fingers and toes In an attack seen in hospital there was at the onset considerable alteration in the rhythm of breathing which became very deep and somewhat hurried. During this attack tetany developed Between the attacks no physical signs of organic alteration of the nervous system could be established

These two patients were put on a diet containing a known amount of calcium and the calcium excretion in the urine and fæces estimated on the days of examination Table I gives the results

Lumbar puncture was performed on both patients C S F was removed and blood taken at the same time the lumbar puncture needle was then left in situ throughout the whole of the experiment Each subject was made to overbreathe and when

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* Work undertaken on behalf of the Medical Research Council

(Continued from previous column)

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tetany was well established, C S F and blood were removed simultaneously Overbreathing was stopped and when the patients had completely recovered further samples of C S F and blood were removed (Table II) It is of note that in one case tetany occurred in 10 minutes and in the other in 16 minutes, both times being earlier than often occurs in normal subjects, although this is by no means the rule

TABLE I

Calcium Metabolism

—	A B		C D	
	Date	Calcium (g per day)	Date	Calcium (g per day)
Intake	Oct 3rd „ 4th	1 28	Oct 10th	1 49
Output	Urine Oct 3rd „ 4th	0 26	Urine Oct 10th	0 31
	Fæces Oct 3rd „ 4th	1 25	Fæces Oct 10th	0 38
Balance		−0 23	—	+0 8

TABLE II

Time Relationships of Overbreathing and Tetany

Sequence of events (C S F and blood taken before experiment)	Time	
	A B Oct 3rd	C D Oct 10th
Lumbar puncture	11 27 A M	3 8 P M
Began overbreathing	11 34½	3 8½
Very slight tetany in hands	—	3 13
Severe tetany	11 44½	3 20
C S F and blood taken during tetany	11 46	3 26
Overbreathing stopped	11 48	3 26½
Patient normal C S F and blood taken	12 1	3 36

The calcium was estimated by Kramer and Tisdall's method (Harrison 1930) the serum having been removed from the blood as soon as was possible All three specimens of C S F and of serum from each patient were put up simultaneously and in duplicate and in no case was a significant difference in the duplicates found (Table III)

TABLE III

Calcium Estimations (mg per 100 c cm)

—	A B		C D	
	Blood	C.S F	Blood	C.S F
Before tetany	9 7	3 9	10 3	4 2
During tetany	9 4	3 8	9 8	4 4
After tetany	9 4	3 8	11·0	4 8

RESULTS

It is seen that in both cases there was a slight but definite reduction in the serum calcium during the stage of tetany Scott and Cantor (1933) found a slight rise, while McCance (1932) found it stationary in one case and very slightly increased in another In A B there was a very slight decrease and in C D a very slight increase of the C S F calcium, but both are within the limits of experimental error

In experimental work upon other substances it has been generally recognised that there is either no rise or only a very slow alteration of the C S F contents on altering those same constituents in the blood (Cumings and Carmichael 1934, Jacobson 1932, Fremont Smith and Dailey 1925)

From such work it seems very unlikely that there could be changes in the C S F calcium such as Barnes and Greaves describe, especially as such changes would have occurred presumably in roughly 5 mins —the time taken for tetany to appear In these experiments of Barnes and Greaves there is no record that the resting specimens were taken immediately before the period of tetany, if they were taken on a previous day they can hardly be described as being necessarily identical with ones that might have been taken at the commencement of the experiment In our two cases we have overcome such criticism by leaving the lumbar puncture needle in situ throughout

For a similar reason it does not seem justifiable to us to consider the necessity that C S F must be formed across the endothelium of small vessels of the spinal meninges as Barnes and Greaves have postulated in explaining this decrease in the C.S.F calcium

SUMMARY

In two cases of spontaneous overbreathing tetany there was no appreciable decrease in the C S F calcium although a small decrease took place in the serum calcium in each

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RETROPERITONEAL SARCOMA OF UNUSUAL DISTRIBUTION

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With a Note on the Histology by

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WE have seen references to 24 cases of retroperitoneal sarcoma, but so far none has been exactly parallel with that described here Judd and Lawson (1933) of the Mayo Clinic state that of 46 surgical cases the ratio of male to female patients was 2 to 1 The disease is most common in the fourth fifth and sixth decades of life. The symptoms resulting from the disease are usually vague and there may be no impairment of health until the lesion has advanced to a late stage Surgical removal of the lesion was permanently successful in 15 cases They state that this form of treatment combined with heavy doses of radium and Röntgen therapy is the treatment of choice In their series the order of frequency was pure sarcoma fibrosarcoma, lymphosarcoma myxosarcoma, liposarcoma, fibromyxoliposarcoma fibromyxosarcoma myosarcoma and paraganglioneuroma.

Funk and Wickstrom (1931) quote a case of a man aged 50 admitted to hospital with pain in the left side of lower part of back and left leg

There was a history of weakness and loss of weight during the last two years A few days before death he showed signs of meningeal irritation with coma and neck rigidity The autopsy showed a reticulum cell sarcoma, which was primary in abdominal lymph nodes with metastases in lung ribs pancreas kidneys and vertebræ

Pow (1936) quotes a case of retroperitoneal sarcoma with pain referred to the thigh in a man aged 25

There was considerable rigidity of right loin but no definite mass was felt Temperature was not raised sleep almost impossible albumin and pus in the urine; moderate leucocytosis After two days unconsciousness patient died. Post mortem the kidneys appeared normal macroscopically but just below the lower pole of the right kidney infiltrating the right iliopsoas muscle was a large fixed sarcomatous mass with many outlying nodules Nerves running down towards Poupart s ligament were involved. No secondaries were seen in the liver but both lung bases presented numerous small growths

Murray Newton (1932) describes a girl aged 17 who had a retroperitoneal sarcoma which apparently disappeared by treatment with radium and deep therapy

Although not frequently met with therefore these cases may occur in any practice and we make no apology for publishing our own experience.

CASE REPORT

A married woman aged 68 was admitted to the Royal Waterloo Hospital on May 10th 1936 at the suggestion of one of us (H. W) on account of abdominal pain, loss of weight anorexia, and anæmia.

She was quite well till some 3 to 4 years ago when she developed abdominal pain which came on ½–1½ hours after food It was relieved by alkalis and eructation The appetite began to fail and her general health from that time gradually became more and more unsatisfactory

A year ago she had an acute attack of abdominal pain central in origin which passed up the left side of chest associated with profuse vomiting which lasted 12 hours. Two similar attacks occurred six months ago, when the character of her indigestion changed, there being pronounced anorexia and the pain becoming constant and unrelieved by alkalis Asthenia and loss of weight quickly followed Four weeks before admission she complained of pain in the spine and lower part of the back with weakness that quite prevented her sitting up in bed. A week later there was a "stroke" with loss of power in the legs slight drooling of saliva from the right side of the mouth, possibly speech defects and loss of rectal sphincter control She gradually improved but there was vomiting again and increased abdominal pain She was usually constipated but there was now occasional diarrhœa Any exercise caused some dyspnœa. The patient has had three children one of whom died in infancy from caries Her husband died from tabes dorsalis

On admission the notes state "patient is a thin cachectic woman a spotty brown pigmentation is present on chest abdomen arms and legs Mucous membranes pale hæmoglobin 40 per cent; tongue dry and red. The pupils reacted to light and accommodation; no cranial nerve defects found. A few râles were present at the right base The circulation was normal and the blood pressure was 130/84 mm Hg

There was some fullness in the abdomen, especially on either flank and a sense of resistance in left hypochondrium and partly also in right There was no indication of fluid. It seemed as if there was a ridge to the right and the left of the stomach which appeared to be connected with it These areas were tender and painful. Per rectum some ballooning of the rectum was apparent but no tumour or glands felt and nothing abnormal was noted per vaginum Legs thin reflexes normal The stools were normal and also the urine

Left septic parotitis developed with a rise in temperature to 101° F Having gone steadily downhill despite treatment with liver extract and iron which produced no effect on the hæmoglobin the patient died suddenly on June 5th

Investigations.—Blood count (May 20th):

Red cells	2,600,000	White cells	9800
Hæmoglobin	40%	Polymorphs	71.5%
Colour-index	0.8	Eosinophils	1.5%
		Hyalines	6%
		Lymphocytes	20%
		Basophils	1%

On June 20th the hæmoglobin was 41 per cent

Radiogram of stomach: No evidence of new growth of the stomach, but there may be something displacing the stomach to the left

Occult blood test gave weak positive result with guaiacum, but negative spectroscopically

Fractional test-meal There was no blood, bile or mucus seen; starch was present throughout; free hydrochloric acid and total acidity were within normal limits

Post mortem report.—The body was thin and cachectic rigor mortis present Left suppurative parotitis Basal congestion of lungs but no consolidation; mild atheroma present in the aorta and blood vessels

The left and right hypochondrial regions were the site of two large tumours retroperitoneal in position. The left was larger than the right, producing a forward displacement of the stomach. The spleen was compressed to ½ normal size but otherwise normal The left tumour together with the kidney to which it was attached, and the pancreas were removed in one mass The right was separated from the under surface of the diaphragm being adherent to it only by fibrous tissue and removed with the kidney The tumours were easily removed, invasion of the surrounding tissues apparently being prevented by their capsules fibrous tissue structures ½ in thick. No evidence of normal suprarenal gland was found on either side in the tumour or suprarenal area

The liver showed fatty degeneration and no macroscopic evidence of secondary deposits. The bladder pelvic viscera, and intestines were normal No enlarged glands were discovered except in the pancreas (V I) The brain was normal; no secondary deposits found

Histological report.—The specimens brought to the laboratory from the post mortem room consisted of two large ovoid tumours of approximately 9 [illegible] × 4 in Except at one mid lateral zone corresponding in each case to that part of the tumour lying nearest to the spine each tumour was encased in a fibrous capsule Both tumours lay completely behind the peritoneum When cut into each was found to consist of a massive neoplasm thrusting aside and quite separate from a compressed but otherwise normal kidney The growth extended around the renal vessels encircled the ureter and was probably continuous with similar growths in the aortic region The tail of the pancreas was in close contact with but separate from the growth on the left side On the right side the liver was not adherent to the tumour Careful search for suprarenal tissue was made in both specimens but none could be found. The central part of the main neoplastic mass was breaking down resulting in a central cavity about 3 in. in diameter containing necrotic structureless material and much old and recent blood-clot In both tumours hæmorrhages probably occurred within 48 hours of death. To the depth of about 2 in tissues of the tumour had not degenerated, and from this level various sections were cut The greater part of the neoplasm consisted of sarcomatous tissue in which the individual cells were round, of medium size, rarely showing a tendency to elongation. They possessed a moderate amount of cytoplasm, and their nuclei stained moderately well (Fig 1) The intracellular tissue showed some tendency to fibrillation and occasionally well formed vessels could be seen, but on the whole the vascular channels were very imperfect and poorly supported, many small hæmorrhages being seen About 5/6 of the whole tumour had the above appearance, but in a few areas the cell type changed and from being chiefly round became very mixed and included numerous multi nucleated giant cells of various sizes In these zones the vessels were rudimentary and the hæmorrhages more numerous (Fig 2)

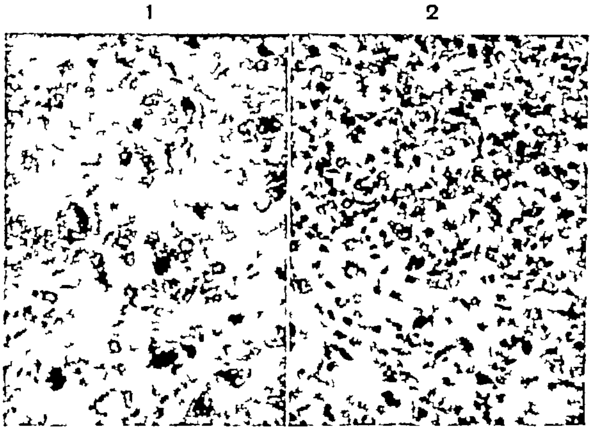

FIG 1 —Structure of greater part of the sarcoma medium-sized round cells

FIG 2.—Structure of areas comprising about ⅙ of the tumour tissue mixed-celled sarcoma with several giant cells.

The bulk of the tumours on both sides would be described as a fairly characteristic round celled sarcoma with local transitions to the mixed cell type The general appearances of the specimens suggest a retroperitoneal origin in the aortic region with extension taking place in all directions but most strikingly along the line of the renal vessels, producing two large tumours in the renal region compressing but not actually involving either kidney It is a case of retroperitoneal sarcoma of somewhat unusual distribution

DISCUSSION

There was no evidence of disease of the stomach or bowel, nor of a primary blood disease, lymphadenoma, renal or splenic tumour, or ovarian, pelvic or rectal There was no reason to suspect hydatids The probability was in favour of a malignant tumour in the abdomen near the left border of the stomach The difficulty, however, was to account for the feeling of fullness and resistance to the left and right of the stomach, which appeared to be placed between two resisting areas, but from investigations was apparently normal itself. Was one tumour present or two? That was difficult to determine during life Her age, wasting, appearance, anæmia, abdominal pain and swelling, together with her history, strongly suggested an abdominal malignant growth. It was hoped to give her the benefit of operation, but her general condition did not merit it Unfortunately the patient was too weak to have a barium enema and her sudden death prevented further clinical investigations

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AN INVESTIGATION OF THE RELATIVES OF PATIENTS WITH GASTRIC CANCER

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AND

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IN studying the rôle of inheritance in the ætiology of gastric cancer we were interested, among other things, in determining a possible connexion between the disease and secretory disturbances

Our series consisted of 167 relatives of patients with gastric cancer—34 sibs, 103 offspring, and 30 of the more distant relatives The stomach contents of these relatives was examined by means of the Boas Ewald test meal, with the following modification 60 grammes of unsalted white bread and 250 c cm of distilled water For a control population we used husbands and wives of gastric cancer and ulcer patients, also persons who at one time were operated on for cancer of the breast, uterus, and skin, and their relatives, as well as some other patients All of these, 150 people in all, were investigated by the above mentioned method

Of the 167 relatives, 23 (13 8 per cent) showed absence of free hydrochloric acid in the stomach contents among the 67 males there were 10 cases (14 9 per cent), among the 100 females there were 13 cases (13 0 per cent) of achlorhydria The higher frequency of achlorhydria among the relatives as compared with the controls is evident from Tables I and II

TABLE I

Incidence of Achlorhydria in the Families of Patients with Gastric Cancer and in a Control Population

—	Male (%)	Female (%)	Over 30 years (%)	Under 30 years (%)	Total (%)
Relatives	14 9 ± 4 6	13·0 ± 3 4	30 8 ± 5 7	2 9 ± 1 7	13 8 ±
Control group	3 2 ± 3 2	8 4 ± 2 5	10 1 ± 2 9	0	3 ± 1

TABLE II

Details of Age groups in Table I

Age	Relatives			Control group		
	Total	Achlor hydria	Per cent	Total	Achlor-hydria	Per cent
0–10	11	—	—	3	—	—
11–20	44	—	—	22	—	—
21–30	47	3	6 4	16	—	—
31–40	40	11	27 5	38	2	5·3
41–50	12	3	25·0	36	2	5·6
51–60	12	6	50·0	27	7	5·9
61–70	1	—	—	7	—	—
71–80	—	—	—	1	—	—
Total	167	23	13 8	150	11	7 3

RESULTS

The presence of a definite familial trend—the high incidence of achlorhydria among the older relatives of patients with gastric cancer—points to some rôle of heredity in the ætiology of this disease No such trend was noted among the persons who had any other localised cancer (uterus breast skin) and their relatives among 45 in this group over 30 only 3 cases (6 7 per cent.) had achlorhydria It seems to us, therefore that achlorhydria in the families of gastric cancer patients is one expression of the hereditary factors determining the particular localisation of the growth. In some of the cases of gastric cancer achlorhydria appears to be a forerunner of the disease

DANGEROUS RECTAL TRAUMA DUE TO A RIGID NOZZLE

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An article by H H Rayner (*Brit med J* 1932 1 419) attracted my attention at the time but I confess that since no case of this kind had been seen by many colleagues or myself in some 25 years of hospital and private practice I still thought that the risk of serious damage due to a rigid douche nozzle must be very slight I have been called in consultation to two cases in the period of six weeks This has impressed on me the real danger of anything other than a rubber tube being passed into the rectum by a nurse who cannot be expected to have a sound knowledge of the anatomy of the rectum with its curves, and the valves of Houston especially as the mucous membrane of the rectum according to Lockhart-Mummery is only slightly sensitive above 1½ in from the anus

CASE 1 —A lady aged about 55 years though quite well was having a course of colonic lavage as she thought it was a very clean thing to do She was having the third of the course about 4 P.M. one day when she was suddenly seized with violent pain in the lower abdomen and lower back and collapsed. A nurse came to her aid but a minute or so elapsed before the douche was stopped and she was lifted on to a couch where she was given sal volatile and warm bottles applied. She felt very ill and it was 7 P.M before she was taken to her flat in a taxi by one of the nurses and put to bed By 9 P.M she was feeling worse and sent for her doctor who called me in consultation

She was found to be severely shocked and presented the signs of a pelvic peritonitis On rectal examination no tear could be seen or felt but there was a little blood on the examining finger A diagnosis of perforation of the rectum was made and operation advised. She was removed to a nursing home but then refused operation and it was 2.30 A.M before she realised the gravity of her condition and consented.

On opening the abdomen by a median subumbilical incision the pelvic coils of small intestine were found to be injected, and there was about half a pint of thin fluid in the pelvis No perforation of the peritoneum could be seen, but the striking thing was the enormous extraperitoneal œdema in the pelvis and left side obscuring the rectum bladder iliac and descending colon Not less than 2 pints of fluid could have distended the tissues in this way The free fluid was mopped out a tube drain inserted into Douglas s pouch and the peritoneum closed round this The extraperitoneal tissues on the left were then opened and a large amount of fluid escaped, a tube was inserted into this region and the skin and subcutaneous tissue closed round this Lastly a valvular cæcostomy was performed and an intravenous saline given and the patient returned to bed

By the 3rd day she appeared to be progressing well there was almost no drainage so the tubes were removed. On the 5th day her temperature rose to 100 F and a seropurulent discharge began which during the next few days became purulent Her chief complaint was a pain in the lower back, deep to the sacrum The cæcostomy was functioning well For the next 3 weeks there was little change, she had a moderate amount of purulent discharge with an occasional foul-smelling slough coming away In the 4th week some hæmorrhage occurred and she began to lose ground.

A blood transfusion of 300 c.cm was given and improved her condition considerably A few days later 400 c cm blood were transfused and under gas oxygen an incision was made into the left iliac region The extraperitoneal tissues were opened and a drain put in where a track was found extending down into the pelvis Two weeks later as she was not making progress lipiodol was injected through a catheter introduced into the left iliac wound, and a stereoscopic radiogram taken This showed that there was a cavity at the back of the rectum opposite the lower end of the sacrum 2½ by 1½ in in size corresponding to the position where the penetration of the bowel had occurred and where the main damage had been done to the tissues.

Naturally an operation to expose this cavity by removal of the coccyx and lower part of the sacrum was advised but this was refused for some days when after a consultation with Sir Thomas Dunhill the patient agreed and after this made a rapid recovery The cæcostomy took some time to close completely and a tiny sinus discharging a little stained mucus remained for another month but then closed without further trouble She has remained in good health since and from a reading of the reports of similar accidents appears to have been very fortunate

The douche nozzle used in this case was brought to me for inspection and is a truly dangerous weapon consisting of a metal tube some 12 in long as thick as a slate pencil with a ball joint 4 in from the end which had two lateral openings and which was merely rounded not mushroomed I was also informed that the douche can was elevated some 6 ft above the level of the pelvis It is easy to imagine this nozzle impinging on the under side of a valve of Houston and some movement on the part of the patient pressing it through the insensitive mucous membrane and the force of the douche pouring its fluid into the perirectal tissues

CASE 2 —This was a man aged about 58 of the plethoric type who was accustomed to having his bowels act twice daily and one day missing his afternoon motion sent to a nearby nursing home for a nurse to come and give him an enema. This was done with a Higginson syringe with the bone nozzle Apparently he felt pain almost immediately the nurse commenced the administration and only two or three bulb-fulls were injected He had no result from the enema nor did the fluid return but there was a little bleeding thought to be from hæmorrhoids which were present Next day feeling far from well and having passed nothing but some blood, he sent for his doctor who called me in consultation.

On examination the anal region was found to be rather swollen and slightly reddened posteriorly and on the right and was tender A rectal examination disclosed a ring of hæmorrhoids and above this a thickening in the mucous membrane of the right postero lateral wall of the rectum extended as high as the finger could reach The actual perforation of the mucous coat could not be seen or felt but there was some bleeding after my examination A diagnosis of perforation of the mucous membrane with injection of the fluid into the submucous region was diagnosed and operation (cæcostomy) advised, but this was refused by the patient

Some five days later during which time he had suffered much pain, he passed a slough about 7 in. long and 1½ in wide consisting of the necrosed mucous membrane of the posterior wall of the rectum. He now consented to operation and a cæcostomy was performed. For about 5 days he seemed to be making good progress and clean granulations were appearing when he died suddenly from a stroke or possibly a cerebral embolus

Comparing these two cases it is interesting to note that the former though the rectal wall had been penetrated and perirectal and subperitoneal spaces injected with a large amount of non sterile fluid, survived after a long illness, whereas the latter, when the mucous membrane was only stripped up and at most a few ounces of fluid injected, died Both, however, emphasise the great danger of nurses introducing solid nozzles into the rectum, and it should be a definite rule that nothing but a pliable rubber tube should be used for the administration of enemata or for rectal lavage

CARDIOVASCULAR CHANGES FOLLOWING ARTERIOVENOUS ANEURYSM

By G Basil Price, C M G , M D , F R C P Lond

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So long ago as 1875 Nicolodami noted that in cases of arteriovenous aneurysm tachycardia might be present and cardiac hypertrophy take place Wrail in 1877 described the same phenomena Osler pointed out in 1915 that venous stasis was the most serious sequel, sclerosis of arteries with dilatation developing on the proximal side He quoted the case of a patient who had in 1898 an arteriovenous aneurysm in Scarpa's triangle, and died in 1911 having suffered pain and progressive failure of circulation due to cardiac changes For this reason operative measures on the aneurysm were discouraged, the connexion between the arteriovenous aneurysm and cardiac changes as sequelæ not being realised (Wright, 1933)

Lewis and Drury (1923) have pointed out that if the blood leaks from the arterial system through channels other than the natural ones provided by capillaries and at sufficient rate, such leakage will change the blood pressure It seems a matter of indifference whether the leak is back into the ventricle, into the pulmonary artery via a patent ductus arteriosus, or into a vein by direct anastomosis The nearer an arteriovenous aneurysm is to the heart, and the larger the communication, presumably the more serious is the factor leading to cardiac embarrassment and stress Theoretically it seems possible that the negative pressure in the veins close to the heart might become even a positive one, and have pulsation communicated Under these circumstances an immediate embarrassment of the right heart would be likely to ensue, leading to persistent failure of that side with lowered blood pressure, especially the diastolic (Hill and Flack sign) This appears to be the explanation of a case quoted by Reid (1931)

> A man was shot in the right thigh on August 13th, 1924, and eight days later an expansile tumour with thrill was present On Sept 30th an operation was done, the heart being reported as in good condition In 1928 a recurrence of the arteriovenous aneurysm was found, the heart was now fibrillating and general anasarca present On July 12th, 1928, a second operation was performed successfully The cyanosis, venous engorgement of neck disappeared, and the heart gradually reduced to almost normal size

The same writer also states that excision of the arteriovenous fistula may restore a heart to complete efficiency

The following five cases are of some interest as indicating (1) the frequent, if not constant, association between persisting arteriovenous aneurysms and subsequent cardiac changes, of greater or less extent, (2) the period elapsing between the development of the aneurysm, and the occurrence of symptoms due to cardiac changes, and (3) the progressively serious deterioration of the heart, and conversely the chance of improved prognosis if early removal of the aneurysm is successful, even after the cardiac changes have been initiated

I regret that the notes on the cases are brief and curtailed, and leave many lacunæ on desirable observations, such as those as were made in the study of a similar series by Lewis and Drury, and described in their illuminating report Recognising these deficiencies I still felt that these records, embracing a period of nearly twenty years, might have some value as regards prognosis and treatment

ANALYSIS OF CASES

Case 1 —Arteriovenous (A.V) aneurysm of right thigh. The date of injury was Oct 17th, 1918, when the patient accidentally wounded his right thigh In patient treatment of seven days was required, the wound being ¼ in. in extent—depth unknown The A V aneurysm was not diagnosed until May 27th, 1934 (16 years later), when the heart showed only slight enlargement From 1919 however, the man had had medical treatment for dyspnœa for which there was no adequate explanation, and at intervals from then until 1934 had received treatment for a slightly dilated and rapidly beating heart In 1934 he consulted a cardiac specialist who found the A.V aneurysm. The heart was enlarged with tic tac rhythm. Pulse rate 116 standing, 100 lying Blood pressure 130/90 X ray examination showed heart with transverse measurement 5⅛ in. The urine contained a trace of albumin. The femoral artery was ligatured and the last report in 1936 indicated some improvement, though the blood pressure was higher (170/120) but with normal arteries Subjectively the cardiac symptoms had improved

Case 2 —The popliteal arteriovenous aneurysm from gunshot wound developed in 1918 in the right leg and was at once recognised No operation was performed By 1922 there were cardiac symptoms and enlargement of the heart was recognised but the early changes must have been present considerably earlier Between 1922 and 1930 signs of valvular disease became manifest In 1924 a thrill was detected over the apex. In 1928 the apex beat was ½ in outside the nipple line, and there was a systolic bruit In 1932 his right leg became swollen and painful The condition of the heart was as before but with bronchitis supervening Amputation was considered inadvisable owing to the state of the heart and chest, and the patient died in 1934 from rupture of varicose veins

Case 3 —Gunshot wound in left groin in November 1917 Early in 1918 an arteriovenous aneurysm in the left femoral was diagnosed. No operation was carried out By 1921 enlargement of the heart was clearly evident, and by 1931 the compensation had broken down bruits had developed at the mitral and possibly aortic orifices, and the prognosis was grave By 1936 there was total disablement Sclerosis of valves may have been present with a somewhat similar origin to sclerosis of proximal arteries described by Osler

Case 4 —The patient had a gunshot wound of the left arm on July 1st, 1916 and an A V aneurysm had developed by August 16th. Three operations for excision and ligature were performed (August 28th, Nov 10th, and Dec 4th) but without success By 1920 cardiac dilatation and systolic bruit at the apex were present, the latter being ¼ in. outside the nipple line The patient said he had been subject to giddiness and fainting attacks from 1917 Deterioration was slow In 1935 no material change had taken place in the heart and he was still subject to palpitation and dyspnœa Blood pressure 130/85

Case 5 —On April 24th, 1917, the right thigh sustained a gunshot wound close to the great trochanter, with a second smaller wound at the inner part of the right groin A foreign body was removed from the larger one which was found to extend to the bone By May 24th the wounds were reported as healed but an A.V aneurysm had developed between the femoral artery and vein. A machinery murmur and thrill could be heard and felt over a wide area, but no further operation was attempted. Function of the leg remained good except on much exertion but within six months a plexus of veins developed at the back of thigh and knee In 1920 heart sounds were stated to be normal but by 1921 there was a systolic aortic bruit and afterwards a mitral systolic bruit The man, however did not complain of dyspnœa until early in 1923 when the apex beat was in the nipple line with an apical systolic bruit and thrill The blood pressure was 120 The aortic murmurs seemed to have disappeared. By 1924 there was considerable deterioration with cardiac irregularity and palpitation obvious to the patient He remained in much this state until 1932 when the dyspnœa increased and was accompanied by precordial pain Death took place after a sudden collapse when the man was taking a short walk.

CONCLUSIONS

1 From an analysis of these cases it appears that cardiac changes depend to some extent in time of onset and severity on the type of arteriovenous aneurysm and its amenability to operation Early cardiac changes probably date from the establishment of the aneurysm but do not necessarily cause symptoms for a few years Systematic examination of the heart however would bring these changes to light if the probable developments were more fully recognised A late involvement of valves of sclerotic character is likely in progressive cases This was in two cases the main factor in termination of life (16 and 18 years after the original injury) and of causing total disablement in a third case (10 years after the injury).

2 Early surgical treatment for removal of the arteriovenous aneurysm or its obliteration by ligature is strongly to be advised on medical grounds apart from surgical considerations in order to prevent the cardiovascular changes which are almost inevitable sequelæ and an increasing cause of disability

My grateful acknowledgments are due to Dr J H Hebb director-general of medical services Ministry of Pensions for permission to publish these records

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MEDICAL SOCIETIES

BRITISH INSTITUTE OF RADIOLOGY

AT a meeting of this institute held on Jan 14th the president Prof J A CROWTHER being in the chair a paper on

Cerebral Arteriography

was read by Dr H W DAVIES A certain amount of work on cerebral angiography had he said been done in this country but very little had been heard of it. Cerebral tumour was a sufficiently distressing disease to make any weapon of investigation a thing not to be ignored Cerebral angiography had been first attempted by Egas Moniz of Lisbon in 1929 after two years experiments on animals and corpses In 1931 one of his colleagues Dr Almeda Lima had demonstrated it in London at the National Hospital Queen-square using sodium iodide as the radiopaque medium This salt was opaque enough for the purpose but had proved too risky when there was any arterio-sclerosis Thorotrast was now used injected into the common carotid artery after its exposure through a small cervical incision The operation was performed in the theatre under local anæsthesia, after a general sedative Lateral views only were necessary in most cases The surgeon used a long curved needle of not too large bore as the artery lay somewhat deeply in the wound The amount injected was 10–12 c cm for the arterial system or 16–17 c cm for the venous system Some force had to be used to get the rather viscous thorotrast through the narrow needle so the surgeon must have all possible freedom of movement and be able to steady himself The first film was taken when about 10 c cm. had passed out of the syringe and the exposure must be short about 1/10th sec The head must be centred on the cassette before the injection started Shock proof apparatus was most desirable Thorotrast did not mix intimately with the blood and so the veins could be visualised By means of a new apparatus cassettes could be slid under the head and six films taken at intervals of a second From the blood stream thorotrast was eventually picked up by the cells of the reticulo-endothelial system In view of the amounts formerly used for visualisation of the liver and spleen it might be said that the small doses used for radiography were reasonably safe One objection was that its continuing radio activity might ultimately produce fibrosis in the reticulo endothelial system. It was imperfectly eliminated and remained in the system for years and might become partially converted into mesothorium and radiothorium Cerebral arteriography should therefore not be lightly undertaken, but the conditions in which it was applicable were sufficiently serious to justify the slight risks

The first discovery made had been that the blood supply of the brain passed to it much more quickly and in greater volume through the internal carotid artery than did the blood flowing to the superficial tissues by the external carotid The superficial vessels therefore did not obscure the intracranial ones until some seconds after an injection into the common carotid. Probably this was due to the size of the capillaries, which were larger and more numerous and also more dilated during mental excitement, than the general body capillaries Another factor was the anatomy of the external carotid which soon gave off a number of large branches The only immediate small branch of the internal carotid was the anterior communicating artery which in fact rarely appeared in the arteriogram In effect the external carotid was like a river delta. The internal carotid described a complicated system of curves which had diagnostic importance According to the anatomical text books it first curved back and then ran forwards again, but this was seen arteriographically in 30 per cent. of cases only and in 70 per cent it formed a complete S and then divided into anterior and middle cerebral the latter splitting almost at once into three branches which formed one of the best landmarks the Sylvian group The curves of the parent trunk had been termed the carotid syphon The ophthalmic and the anterior choroidal arteries might also prove of diagnostic importance The communicating arteries were not often seen, but the posterior part of the circle might be visualised by injecting thorotrast into the subclavian artery by a small subclavicular incision and compressing the artery beyond the point of injection Regurgitation of blood drove the thorotrast back into the basilar trunk which would be found to rise almost vertically from the base of the skull.

Abnormalities of the vessels themselves and of their position were the diagnostic points made apparent by arteriography Their grouping would sometimes indicate the tumour, and some tumours had greater blood supply than others Frontal lobe tumours showed absence of the upper bend of the syphon so that the curve was a U open posteriorly The whole Sylvian group was pushed downwards, and the anterior cerebral was displaced backwards and downwards A tumour in the front would push the Sylvian group somewhat downwards, but the displacement was still more marked if the tumour was situated further back. Midline tumours tended more to displace the syphon downwards so as to give a very marked curve to the anterior cerebral and pericallosal arteries The Sylvian group was pushed upwards and widely separated by suprasellar tumours and the internal carotid displaced sideways Temporal tumours pushed up the Sylvian group, leaving a margin round the tumour, and narrowed the syphon Deep temporal tumours displaced the vessels towards the observer in a lateral view, and also widely spaced the Sylvian group More superficial temporal tumours might obliterate the syphon Posterior temporal growths would leave the syphon alone A small tumour might not cause any displacement

Vascular tumours like angiomas had large looped vessels of supply to them, and they themselves showed as coiled masses of blood-vessels Meningiomas had normal sized vessels of supply

Arteriography was also useful in intracranial aneurysms These were usually larger than would be expected from the film and filled with blood clot They appeared as rounded opacities

DISCUSSION

Dr **Duncan White** said that a few years ago he had done some cases, one of which he would show Originally the external carotid had been clamped—apparently quite unnecessarily He asked if the liver and spleen of any patients had been examined at a later autopsy The spleen of patients after hepatolienography had been found sufficiently radio active to fog a film Arteriography could not be regarded—at any rate in this country—as an out patient procedure In what proportion of cases, he asked had it given information that could not be obtained by direct radiography or ventriculography ? The *case he showed represented an intracranial aneurysm* diagnosed in this country in January, 1933

Dr **G E Vilvandré** said that arteriography involved very highly skilled work on the part of the surgeon, and should be reserved for cases where the diagnosis could not be made by other means He had been startled at the force used by the young surgeon keen on getting a diagnosis The results of the method were, however, impressive Aneurysm was an important field in which arteriography was justified, but cerebral tumours in a large proportion of cases could be revealed by direct radiography A good clinical examination was also essential. He hoped that the paper would not lead small hospitals all over the country to try to produce arteriograms

Dr **M. H Jupe** agreed that arteriography should be confined to lesions connected with the vessels Tumours at the base might not give any clue through the vessels Second pictures gave a better view of meningiomas than early ones

Dr **G Simon** mentioned the possibility of failure due to the injection being made too slowly He took his first film after 10 c cm had passed in, and another three seconds later

Dr **R McWhirter** said he had seen aneurysm successfully shown up The photograph was usually taken after counting six A Potter-Bucky diaphragm had considerably improved the results

REPLY

Dr **Davies**, in reply, said that the injections into the common carotid had not had any ill effects on the results He had never examined the spleen of a patient on whom he had done an arteriogram. He knew of one case where a hepatolienography had had no ill effects seven years later Only about 12 c cm. of thorotrast were used in most cases, as the second side was not injected unless it appeared necessary No arteriography had been carried out in his department unless a ventriculography had already proved of no value Only about thirty cases had been done altogether

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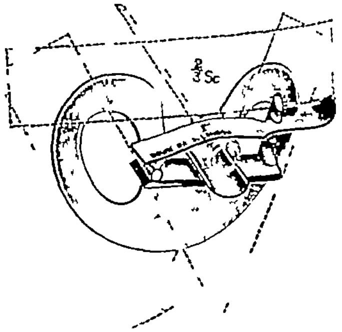
NEW INVENTIONS

PNEUMOTHORAX NEEDLE-HOLDER

During pleural washouts or the treatment of spontaneous pneumothorax it is desirable to keep the needle securely fixed into the chest wall, for, owing to respiratory or muscular movement, it is liable to lateral displacement and may work itself out of the skin



These defects are entirely overcome by using a small device that consists of a slightly concave base with lateral fenestrations, from the centre of which projects the needle support and spring catch for instant adjustment or fixing The holder is secured to the chest wall by strips of adhesive plaster as shown in the illustration

I recently used a similar instrument in a case of spontaneous pneumothorax with valve action, and the needle was kept in position for ninety six hour

This appliance is now being made by Messrs Down Bros , Ltd , London

David A Herd, L R C.P Edin
Late Assistant Tuberculosis Officer Stoke-on Trent

Kent and Canterbury Hospital —The erection of the new hospital on a site in the south of Canterbury is progressing and its total cost, together with the nurses' home is expected to be about £125,000, with an additional £22 000 for apparatus and equipment About £102,000 has been collected already

REVIEWS AND NOTICES OF BOOKS

Urological Roentgenology

By MILEY B WESSON M.D Ex President American Urological Association and HOWARD E RUGGLES M.D Roentgenologist to University of California Hospital St Luke s Hospital and Clinical Professor of Roentgenology Univ of California Medical School London: Henry Kimpton. 1937 Pp 260 22s *6d*

THE publication of a work of this character was suggested as long ago as 1923 Since that time members of the American Urological Association have assisted the editors by sending to them films characteristic of various urological conditions accompanied by case histories and operative and post mortem findings As a result Drs Wesson and Ruggles have been provided with a superb collection of radiograms Plates selected from this collection form the basis of the present volume The aim has been to reproduce those most characteristic of the various urological conditions that the practitioner is likely to meet For this reason attention is paid less to rarities than to commonplace lesions Perhaps the most interesting chapter in the book is that dealing with renal tuberculosis the editors are strongly of the opinion that the danger of pyelography in the presence of renal tuberculosis has been over-emphasised, and that urography may be the only means of arriving at a diagnosis in certain cases They illustrate this by plates showing various stages in the progress of renal tubercle Another section which is remarkably complete is that which deals with solitary cysts of the kidney This condition is not as rare as some works would suggest and a study of the characteristic changes should make it possible for anyone unfamiliar with the lesion to diagnose it in a pyelogram

The text is clear and restrained just sufficient to allow the reader to interpret the plates As in all condensed writing statements appear which may sound dogmatic such as that hypertrophy of the psoas muscle may result in a distorted hydronephrotic pelvis, but this is perhaps inevitable in this form of literature. We warmly recommend this work to all who require a comprehensive survey of X rays in urology

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Physiological Principles in Treatment

Seventh edition By Sir WALTER LANGDON BROWN and REGINALD HILTON London Baillière Tindall and Cox 1936 Pp 308 10s *6d*

IN the last decade our ideas have undergone fundamental alterations on many points of cardinal importance in physiology The same period has seen a much wider use of exact scientific methods in clinical work Those sentences are from the preface not of this but of the first edition of a book which was written in 1908 as a series of chapters on applied physiology intended to show the student or the busy practitioner how far physiological facts and principles pointed the way to rational treatment or provided rationale for treatment long justified by the results of its empirical use The chapters have changed their content a good deal in successive editions and in this one their general plan alters a little too Vitamin now stand alongside the hormones ketosis comes into the same chapter as diabetes destructive criticism of such ill founded theories as those relating to intestinal toxæmia can now the authors think be safely curtailed the section on asthma is extended to include some other allergic manifestations and a new chapter on the anæmias appears Through these changes the general purpose of the book remains unaltered It brings the physiologist to the bedside and mobilises his contribution especially his more *recent contribution to treatment It is written for* the intelligent practising doctor not for the specialist or the research worker and is therefore not overburdened with detail and not afraid in places of confident statement where the expert might prefer to hedge It is simple clear and readable Medicine has still much to learn from the physiologist s discoveries, and from his manner of thinking so we share with the authors of this book their hope that in its new form it may continue to serve its useful purpose

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The Operations of Surgery

Eighth edition By R P ROWLANDS M.S F R C S late Surgeon to Guy's Hospital; and PHILIP TURNER, B Sc M S F R C S Consulting Surgeon to Guy's Hospital. London: J and A Churchill Ltd Vol. II 1937 Pp 998 30s

FOR the second volume of this splendid text-book of operative surgery which includes all the surgery of the trunk, the assistance of other writers has been invoked. Mr W H Ogilvie has revised the sections upon spleen hernia pancreas rectum and surgical *preparation* Mr *Ralph Thomson has written on* genito urinary operations Mr G F Gibberd on pelvic operations in women and Mr R C Brock on thoracic surgery There will be some regret at this multiplicity of authorship for it brings the book into danger of losing just those qualities especially the feeling that it voiced the mature views and sound judgment of two surgeons, which gave confidence to those who followed its precepts The reader can no longer open it with the same conviction that he will be adopting a wise course by following its advice The book is becoming more a compilation of operations and methods without that guidance which has hitherto been the secret of its popularity *and success And even for this purpose it fails for* no one could carry out a Harris s operation for removal of the prostate from the description found on page 720 It shakes our confidence to read of operations for removal of the vesiculæ seminales for tuberculous epididymitis and to see the many years old diagram depicting the lymphatic spread of carcinoma of the rectum when modern research both at home and abroad, has made it clear that when a growth in this situation is removable there is no downward spread or extension to the ischiorectal fossa and hence no reason for removing the rectum for more than 2–3 cm below the growth. We cannot find in the book how to deal with a uretero vaginal fistula which has formed after a Wertheim operation and we do not think that the assessment of the value of gastrojejunostomy for duodenal ulcer reflects the general view of physicians or surgeons to-day

Having said these things we gladly testify that there is much of a practical nature and common sense in this book which is difficult to find elsewhere The descriptions of operations are clear and precise difficulties are noted and causes of failure suggested If the character of the original work has been changed it is true to say that the book ranks high in surgical literature and we have no doubt that it will continue to be a standby to junior surgeons in grappling with the many operative problems they meet

An Introduction to General Practice

By E Kaye Le Fleming, M A, M.D, Chairman of Council, British Medical Association, Direct Representative, General Medical Council Chairman of the Conference of Local Medical and Panel Committees, 1925–30, Chairman, Representative Body, B M A., 1931–34 London Edward Arnold and Co 1936 Pp 150 5*s*

None could be better qualified than the author of this book to teach the young doctor starting general practice what he should know about it and in so far as the written word can even take the place of practical experience, Dr Le Fleming has, in the main, succeeded in his task. Here will be found much shrewd advice upon N H I and contract practice, midwifery, drugs and the chemist, finance, the law, and that unique relationship which exists between the general practitioner and his patients The essential difference between hospital and private practice is clearly and accurately defined "In the hospital [the doctor] is omnipotent, the patient a slave who must take the treatment offered and accept it as the best—or leave In practice the position is reversed The patient is the master and the doctor a paid adviser The patient may take as much or as little of the advice offered as he wishes, may question its quality and change his adviser at will." Dr Le Fleming's frank remarks on professional deportment savour of the last century We are told that because many patients dislike the smell of tobacco the doctor should not smoke till his day's work is over (whenever that may be), and that in no circumstances should the doctor, until he has removed his overcoat, approach the sick room There is surely plenty of evidence that the personality of the doctor soon overrides these trivial things and that many a general practitioner may be as well beloved for his unconventional behaviour as for his skill and kindliness There is an amusing misprint on page 120 where "waiting rooms" are described, with a good deal of unconscious truth, as "waiting tooms"

Man, The Unknown

Popular (second) edition By Alexis Carrel London Hamish Hamilton 1936 Pp 318 6*s*

In this book the author attempts, he admits imperfectly, to analyse and interpret man in the light of the relevant facts about him furnished by the various branches of natural science, among which he includes psychology, although denying, perhaps with some truth, that this study is as yet worthy to be called scientific In attempting so large a task within so small a compass, Dr Carrel has been compelled to adopt a dogmatic method and to confine himself to making a large number of what he describes as approximately true statements but which are, in fact, very often his own conclusions, many of which are highly provocative and controversial Indeed, there is material for argument on almost every page The latter part of the book deals with the remaking of man and attempts somewhat vaguely to synthesise him on sounder lines Modern industrial conditions, thinks Dr Carrel, and few will quarrel with him here, crush individuality and standardise mankind to a poor pattern The remedy, he suggests, lies in a return to a vigorous life of physical hardship and mental self discipline "Culture without comfort, beauty without luxury, machines without enslaving factories science without the worship of matter, would restore to man his intelligence, his moral sense, his virility, and lead him to the summit of his development" Too much useless effort, he maintains, is being expended in trying to strengthen the weak. Our object should be rather to strengthen the strong and so breed a "non hereditary aristocracy" of mentally and physically superior persons who "could effectively help the weak." But might it not follow that such an aristocracy of the strong would become arrogant and despise the weak without wishing to help them?

Dr Carrel discriminates sharply, and it may be wondered upon what evidence, between the potentialities of the male and female brain He is no feminist but believes that woman's primary function is the bearing and rearing of healthy children to which end he would have infant welfare taught in girl's schools With the problem of the unmarried or sterile woman he wisely refuses to wrestle The reader may feel that the author's constructive notions suggest a grim, humourless efficiency savouring too much of totalitarianism for the English taste Nevertheless the book is an important one written in a simple and readable style

Absorption from the Intestine

By F Verzar, Professor of Physiology of the University of Basle, assisted by E J McDougall, Ph.D London Longmans, Green and Co, Ltd. 1936 Pp 294 21*s*

This admirable book is the seventh of the monographs on physiology which were for eleven years edited by the late Ernest Starling The present volume appears with a general preface by Prof Lovatt Evans, and we welcome the knowledge that the series is to be continued under his ægis The subject of absorption from the small intestine is of high complexity but great importance to physicians, and not only those who are especially occupied with gastro enterology, but those whose work brings them in contact with tropical medicine and disorders of the endocrine system will read this volume with interest and profit Particular reference must be made to the discussion of the absorption of water and the illuminating passages dealing with the influence of the cortical hormone on the absorption of sugars. Prof Verzar has long enjoyed the reputation of a master of this subject, and this will be enhanced by the present work which is adorned by many illustrations and includes a first-rate bibliography

Roentgenographic Technique

Second edition By Darmon Artelle Rhinehart, A.M., M D, F A C R, Professor of Roentgenology and Applied Anatomy, School of Medicine University of Arkansas London Henry Kimpton. 1936 Pp 431 28*s*

With advancing knowledge in radiology, increasing attention is being paid to detail in order to differentiate between lesions giving somewhat similar appearances, the demand for better quality films has resulted in more importance being placed on radiographic technique This book admirably meets these requirements and the information is supplied in a practical form It would be safe to say that where difficulty is being experienced, one could almost certainly obtain not only the cause of the error but also the correction of this in the appropriate section. The diploma course in radiography has recently been extended to two years and a book of this type is much required, it will be useful to radiologists who wish to improve the quality of their work and to students of radiography

THE LANCET

LONDON: SATURDAY, JANUARY 23 1937

THE FACTORIES BILL

THE long promised Factories Bill will be laid before Parliament during the early weeks of the session which has just opened Even that, maybe is not quite certain and until the Bill is printed no one outside the departments concerned can do more than guess at the nature of its provisions But speculation is not without a guide we may presume that the new Bill will be based upon the provisions of the Bills of 1924 and 1926 which failed to reach the Statute Book. We must not expect any proposals for widespread or profound alterations in factory legislation but we shall at least find one great boon namely a serious and a consistent attempt to simplify and to codify the existing Acts regulations and orders in which our present factory legislation is embodied —*should we say entombed?* The present confusion in the written word breeds trouble uncertainty and irritation both in industry itself and in its medical supervision. On the analogy of previous Bills we are also entitled to predict a concerted effort to raise and to define at a higher level, some of the basic minima to which a healthy factory must conform There is an appalling gap between the daily routine of progressive firms and that of competitors who regard as lawful anything that does not actually violate any existing order or regulation So long as this state of affairs endures both enlightened employers and well organised groups of workers are placed at a serious economic disadvantage We should like to think that the hours of work in unregulated and casual occupations will be brought under control that overtime will be abolished for all young persons and without exception and that some limit will be set to the overtime-employment both of men and women in industry In his annual report for 1935 the chief inspector of factories related as he had often done before the serious effects of excessive overtime every doctor who has practised in an industrial area has railed against this evil. It is perhaps not unreasonable also to hope that minimal standards will be laid down for many if not for most, of the basic factors in good industrial hygiene—viz. heating lighting and ventilation—and that welfare problems will receive the attention they require Our own profession will anxiously scan the steps proposed to improve and develop the medical and nursing services in industry

Our readers would do well to obtain two communications which have reached us The first is entitled The Provisional Programme of the Factories Bill Campaign[1] the second issued by the Open Door Council[2] is simply called The Factories Bill 1937 The former contains a reasoned series of suggestions which it hopes to find embodied within the new Bill the latter argues cogently for a modern and scientific measure which will give equal and equally good conditions of work to men and to women workers While they are at it might not these bodies of active citizens also give some attention to the Workmen's Compensation Acts which are in a comparable state of chaos?

MIXED BACTERIAL MENINGITIS

DOUBLE infections of the meninges are uncommon. Thus among 442 cases of meningitis in which organisms were identified TRIPOLI[3] found only 2 examples both were fatal and in both of them *Hæmophilus influenzæ* (Pfeiffer's bacillus) was isolated—once with a staphylococcus and once with a pneumococcus In the same series there were 221 cases of meningococcal meningitis with a fatality rate of 65 per cent, and 22 cases of streptococcal meningitis with a fatality rate of 92 per cent CADHAM[4] writes that the proportion of deaths in the latter condition is apparently 97 per cent and quotes H GRAY who was able to find only 66 recorded cases of recovery in 6 of which the patient had scarlet fever

Though streptococci may no doubt reach the meninges via the blood stream or through the perineural sheaths of the olfactory nerves they usually come from the middle ear or (less often) from the nasal sinuses In the case he reports on p 198 Dr CUNNINGHAM regarded the streptococci as secondary invaders—a finding he considers usual—and his opinion that the left mastoid was their source can scarcely be disputed since organisms of the same serological type were isolated first from the mastoid antrum and later from the cerebro-spinal fluid In this case it is clear that although drainage and intensive anti meningococcal serotherapy might have prevailed against the meningococcus alone the advent of the hæmolytic streptococcus—against which anti streptococcus serum appears to be of little or no value'—made the outlook virtually hopeless The fatal issue was in any event determined by the streptococcus but it is interesting in passing to note that Dr CUNNINGHAM employed meningococcal antitoxin the value of which is not yet established whereas most clinicians would probably have preferred antibacterial meningococcal serum especially now that the Lister Institute issues a special serum for use in infections by Group II the strain usually found in the basal meningitis of infants CUNNINGHAM rightly emphasises the importance of a complete bacteriological examination of the cerebro-spinal fluid obtained with rigid aseptic precautions whenever acute mastoiditis is accompanied by signs of meningitis and before any operation is attempted If the meningitis is purely meningococcal, conservative measures he believes will suffice for the treatment of the mastoiditis, if on the other hand the infection is mixed, antimeningococcal therapy must be combined with immediate operation on the mastoid, but unless there is clinical evidence of an intracranial abscess the membranes of the brain should not be opened.

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[1] 32 Primrose Hill-road London N W 3

[2] 4 Elderleigh H 26 Carlton Street London S W 1

[3] Tripoli, C J (1936) J Amer med Ass 106 111

[4] Cadham F T Canad med Ass J December 1936 p 645

To day, fortunately, there is reason to hope that the prognosis of a desperate condition, whether due to meningococci or streptococci or both, may improve with the use of Prontosil or its derivative *p* aminobenzenesulphonamide On Dec 5th we wrote of the imperative duty to employ these preparations not only in puerperal fever but also in other severe forms of streptococcal infection, and since then (Jan. 2nd) Mr H PROOM has reported in our columns that *p* aminobenzenesulphonamide, injected immediately, will protect mice against about a million minimal infecting doses of the meningococci, whether of Group I or Group II Although, as PROOM remarks, the conditions in established cases of meningococcal meningitis in man are by no means comparable with those following intraperitoneal injection of culture into mice, the results of his experiments suggest—and we would add, demand—clinical trial of the drug, especially as he says that "cerebrospinal fluid taken from rabbits which have received large doses of the drug inhibits the growth of a small inoculum of streptococci, whereas a similar number of streptococci grow freely in the normal fluid" Streptococcal and meningococcal meningitis should thus be added to the list of conditions in which one or other of these new therapeutic weapons should be brought into action. On p 194 Mr A T FULLER, D Sc, describes fresh inquiries into how they work.

BURIED TREASURE

WE have already reviewed[1] the work of the Board of Control (Lunacy and Mental Deficiency) as set out in its report for the year 1935 This annual report is an index of progress made during the year and is eagerly scanned by all who are interested in mental care But the Board issues a supplement to this report in the form of a non-statistical review of what is being done at the mental hospitals The current volume[2] covers laboratory and other routine, research, clinical odds and ends, and the individual reports by the Board's commissioners of what they found and recommended on their visit to each institution. The perusal of this rather heterogeneous collection is likely to reassure anyone who fears that the comfort and the health of patients are neglected in mental hospitals or that there is little clinical investigation, treatment, or research

This in itself is no mean service, but unfortunately the book has not been indexed or properly edited, and many interesting communications are buried in it This applies to some modest or provisional reports such as J E Howie's trial of manganese chloride in the treatment of dementia præcox (p 88), Haslam Fox's use of Evipan sodium in continuous narcosis (p 119), Ann Evans's study of an outbreak of dysentery (p 117), and the similar investigations from fifteen other hospitals, the three accounts of the effect of large doses of atropine sulphate upon post-encephalitic parkinsonism (pp 86, 95, 175), and Denis Williams's research into the innervatión of the cerebral vessels. On some subjects—e g, the treatment of G P.I., Sulfosin and Pyrifer therapy in schizophrenia, Somnifaine narcosis, cholesterol estimations—there are many reports, indicating much rather ill-coördinated activity which is less fruitful than it might be, the number of patients observed is in many instances too small to warrant conclusions, and a normal or control series is not mentioned. If such research were planned and carried out in concert by a group of hospitals, instead of sporadically as at present, many a dubious question could be settled or, at any rate, could receive more than a hesitating clinical impression as its answer. Scattered through the Board's report, however, there are also references to work that has been already reported in medical and other scientific journals Most of this necessarily comes from centres, like the Maudsley Hospital (p 110), Cardiff City Mental Hospital (p 78), the Royal Eastern Counties Institution (p 208), and Stoke Park Colony (p 211), which have research as one of their chief objects and are appropriately staffed, but there is much evidence of high scientific standards among investigators in institutions less well equipped for the purpose

The opening summary (p 9) indicates the range and the chief topics of inquiry Noteworthy is the volume of research at institutions for the care of mental defect, especially those of the London County Council, in addition to the two (at Colchester and Bristol) already mentioned There are in the volume also some hitherto unpublished case-reports—e g, encephalomalacia (p 138), pontine hæmorrhage (p 95), suprarenal tumour (p 140), agranulocytosis (p 146), progressive lenticular degeneration (p 158), pellagra (p 182), herpes zoster (p 187), and renal glycosuria (p 188) It may be questioned whether some of these, even if they were more accessibly printed, would serve much purpose in their present brief and incomplete form, like some of the unpublished research here communicated they obviously do not reach the standards exacted by scientific journals Nevertheless they are of interest to other workers and would benefit by the expert scrutiny and appraisal which publication usually entails It may be that there is room for a modest clinical journal for psychiatrists which would not be averse from publishing isolated case-reports and inconclusive pieces of research. In any case it is surely undesir only medium chosen should be an un indexed official report of which no account is taken in the Cumulative Index, the Zentralblatt or any of the other means of reference that psychiatrists use Much of the valuable material in this blue book may remain buried, and it is under this impression that a number of page references is supplied here

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[1] *Lancet* 1936 2 810

[2] The twenty second annual report of the Board of Control for the year 1935 Part II. H.M. Stationery Office 1936 Pp 526 7*s* 6*d*

ANNOTATIONS

MISLEADING LABELS

LABELS are supposed to indicate the nature of e thing labelled, but Dr James Fenton calls atten on[1] to their widespread use to mislead and deceive ose who buy labelled food It is true that the ood and Drugs (Adulteration) Act of 1928 contains ovisions intended to protect the public in the atter of labelling of food but these provisions also ntain clauses intended to guard the seller against xatious prosecution and this makes them difficult enforce. It is not easy to prove that a false label wilfully given knowing it to be false and it is easy print on a label matter which although distinct nd legible is so inconspicuous as not to be noticed y the buyer in the ordinary course of shopping eople neither stupid nor unusually ignorant might ot realise that Wood table vinegar is made by luting and colouring acetic acid formed by destruc ve distillation of wood or that no wine made in ritain is entitled to be called sherry A subtle eans of avoiding the dangers of the law is by what r Fenton calls the collateral advertisement n extravagant puff in the form of newspaper adver isement handbill or radio broadcast which creates ho desire to buy whilst the label, to which the ustomer gives little attention may be moderate in ts claims and legally safe Dr Fenton reviews the ecent experience of the Royal borough of Kensington n regard to articles sold under misleading descrip ions Jam is an article that is very liable to adultera ion and improvement Good fruit is not always btainable at a low price and various materials uch as apple pulp pectin from various sources and ruit juice are used to enable jams to be made con aining low proportions of their titular fruits The Food Manufacturers Federation in 1931 after con ultation with the Society of Public Analysts issued standards for two grades of jam the first quality containing from 45 to 30 per cent of the named fruit according to its nature and the lower quality 20 per cent. with in this case the declaration on the label With other fruit juice The Kensington authorities have found cases where the second quality has been labelled so as to lead the customer to think that it is first quality although it could be contended that careful reading of the label would show that it was not Sweets drugs wines infant and invalid foods and many other classes of food materials are discussed in the article which shows a widespread attempt to defeat the object of legislation intended to protect the public It is difficult to suggest remedies But if specific legislation is ineffective some provision should be made for courts to decide what are equitable dealings as between buyer and seller regard being had to the ordinary conditions of life and these do not allow the busy housewife to take her legal adviser with her when shopping or even to study the label on every article she feels like buying while a row of other customers is waiting to be served

SUPPLY OF SPECTACLES

IN ophthalmic clinics there are at present two methods by which patients may obtain glasses Either an optician appointed by the managing board attends the patients at the place where the eye examination is conducted or the patient takes a prescription to an outside optician The Central Bureau of Hospital Information has made an inquiry into the working of the two systems and has tabulated the replies in one of its useful series of memoranda[1] Certain advantages and disadvantages inherent in both systems may be considered under the heads of optical personal and administrative. From the optical point of view it is obvious that an optician working at a clinic under the direct supervision of an oculist must maintain a recognised standard or give place to a better man That such a standard is of vital importance is patent to ophthalmologists but not so obvious to patients or lay bodies There are almost as many grades of lenses as there are of cloth responsible opticians by long training, know how to select and reject imperfect lenses The discards are accepted by opticians who have not such training or who specialise in cheap work. Often there are several ways in which the optical prescription can be dispensed that most suitable to the patient and his activities can only be selected by a competent optician sometimes with the collaboration of the oculist The frames supplied require careful selection; presuming that they are of good workmanship the optician has to consider the type of work and habits of the wearer before advising any particular style Often the oculist can be of greater service to the patient if he can have the benefit of suggestions from the optician at the time of his examination He can see the effect when the glasses are put on and suggest minor alterations From the patient s standpoint the knowledge that the work and charges of the optician are under professional supervision should weigh heavily Patients taking prescriptions away from the clinic have the advantage of being able to choose their own optician but they run the risk of being persuaded to buy unnecessarily expensive glasses Some of these points are illustrated in the remarks printed in the memorandum from one of the hospitals at which an optician attends

> Under this arrangement the hospital knows precisely what the patients are charged. Previously there were instances of patients taking the ophthalmic surgeon s prescription to an optician and having to pay excessive charges It was also found that certain patients having received the advantage of free consultation with the ophthalmic surgeon purchased a very expensive pair of glasses, and it was felt that this was not right
>
> In the first instance one or two objections were made by patients who wished to obtain their glasses privately but it was pointed out that the prescription was the property of the hospital and could only be used for the supply of glasses by the hospital opticians
>
> The hospital is entirely satisfied with present arrangements and is inviting tenders each year Preference is given to firms which only supply glasses to the public n a qualified medical officer s prescription

Obviously it is a good arrangement for the optician to be in attendance at the clinic, but certain administrative difficulties arise Though an optician may be willing to rent a room from the hospital there may not be one available Where hospitals are mainly dependent upon local contributions there may be a feeling against the selection of a particular optician which will result in loss of subscriptions The difficulty is not diminished when opticians have seats on the board of management. Remarks supplied by hospitals at which an optician does not attend and given in reply to a questionnair which will be found in the memorandum, may make the position clearer

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[1] Med Offr January 1937

[1] Memo No 107 From the director of the Bureau 1 Grosvenor-crescent London S W 1 1s

The ophthalmic surgeons have proposed that an optician should attend at the hospital, but the board have always adhered to the principle that the patients should have free choice of opticians, and no member of the hospital staff is allowed to recommend any particular optician

The practice of allowing patients attending the ophthalmic department to choose their own optician was adopted at the request of the local optical society

The prescription is the property of the hospital It must be used only for the dispensing of glasses in accordance with a scale of charges agreed to and approved by the committee This practice works very well and enables all opticians to have a portion of the work.

Each year a local firm is selected by tender to supply lenses and frames Measurements are taken by a member of the hospital staff and the patient selects the frame from specimens kept at the hospital The prescription, particulars of the frame selected, and measurements are then sent to the firm which obtained the contract They supply the glasses within one week

The self contained clinic may be the ideal solution but not always easy of attainment

THE PERIPHERAL CIRCULATION IN SURGICAL SHOCK

THE cold clammy skin and greyish pallor symptomatic of shock are evidence of deficient peripheral blood flow Measurement of the change they cause in the peripheral circulation is therefore an index of the shock producing properties, for example, of pain, fear, cold, asphyxia, and intestinal obstruction From the Harvard Medical School comes a study,[1] based on observations on medical students and patients, in which a plethysmograph was used to secure graphic records of the circulation through the hand while the person at the other end of the arm was subjected to various abnormal stimuli. Observations were also made on patients during and after abdominal operations and in the state of collapse produced by intestinal obstruction Generally speaking, the effect of harmful stimuli is to decrease the peripheral circulation, this effect being due to vasoconstriction evoked through a sympathetic reflex Withdrawal of the stimulus is followed within a short time by a reactive hyperæmia, and this occurs also after removal of the compression of a tourniquet By measurement of the circulation in the hand Freeman and his co workers at Harvard were able to show that the hyperæmia balances the preceding deficiency of blood to the part oxygen loss in the tissues is thus rapidly replaced In patients with surgical shock the reactive stage develops imperfectly or not at all Vaso constriction remains, and the result is tissue starvation, which if widespread leads to death Freeman thinks that the evidence of other observers of surgical shock points to a general reduction of blood flow throughout the peripheral circulation, affecting the splanchnic area and the muscles in the same way as the hand He regards it as a dangerous exaggeration of the lesser, and primarily physiological reaction, whose aim is to preserve the organism by diversion of the blood to the internal organs

Circulation in the hand is affected by local stimuli as well as by changes affecting the whole organism, and the plethysmograph records were therefore taken with the hand kept at a constant temperature Prolonged exposure of the body to cold uniformly reduced the flow through the hand. The method adopted was to have the student lying very lightly clad on a bed for a considerable time, and then for a short time to open the windows wide Pain was tested by inflating a balloon placed in an ileostomy opening The actual insertion of the balloon produced no effect, but inflation was soon followed by decreased blood flow in the hand. In another patient, who had a permanent colostomy performed for malignant obstruction, permission had been obtained to insert and inflate the balloon on several occasions The effect of apprehension was tested by recording the reaction to a proposal to reinsert the balloon. This was as pronounced, though not as prolonged, as reaction to the actual inflation. Asphyxia, produced by inhalation of gases poor in oxygen, much diminished the blood flow through the hand. Manipulation of the intestine during operation also led to a fall in the peripheral blood flow, and in post operative shock reactive hyperæmia after removal of a tourniquet hardly occurred at all Improvement after intravenous infusion was, however, quickly shown by the plethysmograph. and as the shock passed off so did the peripheral vasoconstriction. Freeman writes of the fallacy of focusing attention on the blood pressure as an index of the efficiency of the circulation. Blood pressure, he says, is an expression of the amount of fluid in circulation and of the peripheral resistance A substantial fall of blood pressure was found in some cases in which the general condition was good and in which the peripheral blood flow was also satisfactory, yet in cases of profound shock blood pressure readings were sometimes near the normal Adrenaline and ephedrine, it is pointed out, are known to be ineffective in combating surgical shock.

PRACTISING MIDWIVES

THE Minister of Health has reminded local supervising authorities that their proposals for the service of salaried midwives should be submitted before the end of the present month We learn from a recent report[1] of the work of the Central Midwives Board that of the 62,064 names on the Midwives Roll at the end of the year only 16,165 were those of women actually in practice as midwives The number in practice it is true is 300 greater than in the previous year, but this must be set against an increase of 3100 in the number on the Roll. The C.M.B. estimates the proportion of trained midwives who practise as such to be only 26 1 per cent of the trained women on the Roll and the proportion diminishes each year The report alludes to the retirement of its chairman, Dr J S Fairbairn, and places on record its admiration of the immense efforts he made to improve the status of midwifery in this country Mr Arnold Walker has been appointed by the Midwives Institute to fill the vacancy so occasioned Apart from the essential figures in the report, interest attaches to some decisions on the etiquette and practice of midwifery given during the year It is now on record that the midwife, like the doctor, has the right to refuse any case which she does *not* desire to *attend*, but this does *not* apply to cases in which attendance may be demanded on humanitarian grounds or in which the midwife owes duty to some employing authority Inquiry having been made whether a midwife is expected to attend for at least ten days any case of abortion to which she has been called, the Board remarks that if it is not a booked case, and the doctor has been sent for privately by the patient or her friends a midwife may retire or may remain as a maternity nurse In reply to another inquiry the Board states that to give ergot at the end of the first stage of labour save in emergency is bad practice and such treatment is regarded as definitely outside the midwife s province The Board sees no objection whatever to the taking by midwives of any steps which may result in the resuscitation of apparently stillborn children Finally a nurse midwife employed by a district nursing association is bound to report to the local supervising authority should she be attending septic wounds or any other condition which may raise suspicion of infection

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[1] Freeman N E Shaw J L and Snyder J C *J clin Invest* November 1936 p 651

[1] Ministry of Health Midwives Acts 1902 to 1936 Report for the year ended March 31st 1936 H.M Stationery Office 1937 Pp 12 2*d*

HOW CHARACTERISTICS ARE TRANSMITTED

To enable us to distinguish between the inherited tendencies and the environmental influences which together mould a developing organism is properly considered one of the most important tasks of biology in its relation to human welfare. In an address delivered on Tuesday last Dr David Forsyth endeavoured to persuade the Eugenics Society that it is a false issue to regard heredity and environment as separable entities we are wasting our time he thinks in analysing living organisms on this assumption. Dr Forsyth argued that the environment of a mammalian germ cell is the parent s body which begins to exert its effect immediately the germ cell is formed. The parent is however as much the product of inherited as of environmental influences The surroundings of the germ cell are therefore an inherited environment, and hence we cannot really distinguish between heredity and environment But surely Dr Forsyth lays himself open to the retort that he is using the word heredity in two different senses ? To the biologist the inherited constitution of an egg is that which is contained within it at its formation and which as experiment shows never deviates from a certain mean in its ultimate expression in spite of environmental changes An environment is not inherited in a biological sense but only in the sense in which property and traditions which are external to the organism can be inherited. For this biologists have unfortunately no separate word Though organisms certainly inherit (biologically) a tendency to produce a particular *type of environment* for their germ cells so far as the latter are concerned it is still purely an environment in which eggs of different hereditary constitutions can develop without losing their individual characteristics Dr Forsyth sought to reinforce his argument by pointing out that soon after development has started the embryo is mainly and probably entirely composed of substances derived from the environment so that there is nothing left of the originally inherited materials The biologist would reply that the essential things that are inherited are not certain substances but configurations of substances—patterns which persist as inherited characteristics though the original molecules which compose them are completely replaced by others from the environment These patterns require a certain range of environmental conditions in which they can express themselves and by which they can within limits be modified Dr Forsyth extended his desire for unification to the organism itself and its environment He showed that spatially no hard and fast line can be drawn between an organism and its environment; *the two imperceptibly merge into each other* and are continually interacting. No doubt this is true but it cannot prevent us from regarding an organism as a kind of focus around which certain configurations of matter are performing characteristic reactions This conception is not invalidated by the *fact that* the reaction system is not sharply demarcated *from* surrounding matter It is again these patterns and reactions which are the essence of the thing called organism the materials taking part in them are derived from the surroundings where these same substances are not behaving in this manner We have reasonable grounds for *differentiating between* a single organism and its environment, *although* as Dr Forsyth quite logically concluded each may be considered in a sense as part of a larger organism comprising all living things and their environments But while unable to follow Dr Forsyth in his conclusions or to find convincing evidence of their practical or theoretical value we admit that the question of heredity and environment is not as *easy* to define as many biologists and even medical men are *apt to assume*, and welcome the stimulus he has *given to consider clearly* what we mean by these terms.

GASTRIC ACIDITY

ACIDITY of the gastric juice is sometimes confused with its volume so that the terms hyperacidity and hypersecretion have even been thought synonymous Such confusion has arisen partly through difficulties in measuring the amount of juice secreted (unmixed with saliva, food or the contents of the duodenum) and perhaps partly because a highly *acid juice is* usually found in large, and an achylic juice in very small, quantities. Gradually however it has become clear that the hydrochloric acid of the stomach is secreted by the acid cells at a constant fixed concentration and that these cells cannot appreciably vary *its* strength. The variable factors are the number of cells actually secreting—and therefore the volume of acid put out—and the diluting agents of which in recent years the alkaline duodenal contents and the neutral or alkaline gastric mucin have been especially studied. Welin and Frisk[1] have lately recorded their estimations of the volume of gastric juice secreted in man obtained by a technique which excluded saliva and duodenal secretions Using as their stimulus to gastric secretion an intravenous injection of 20 units of insulin they found that an increase in acidity and an increased volume of juice followed in about 30–45 minutes; but there was no correlation between the degree of acidity and the rate of secretion—*in other words* the rate of secretion might drop while the total acidity remained almost unchanged In all the cases *of duodenal ulcer investigated the rate of secretion* was high the amounts varying between 200 and 600 c cm of juice in an hour as compared with 100 to 200 c cm an hour in normal subjects The acidity was found in these experiments to be in inverse relation to the amount of mucus and the conclusion is drawn that hyper and hypo acidity are merely terms representing varying *rates of* secretion of a juice of fixed (maximal) acid concentration altered by the diluting effect of gastric mucus This conclusion agrees with views of those who hold that the only means the stomach possesses of reducing its acidity is the secretion of mucus; duodenal regurgitation they say plays little or no part in this regulation Such investigations emphasise the significance of the volume of gastric juice secreted they suggest that hypersecretion and not hyperacidity is the essential consideration in conditions like duodenal ulcer, and that the gastric mucin is very important as adsorbent and acid regulator

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[1] Welin G and Frisk A R (193) *Acta med Scand* 90 543.

EXAMINE YOUR METHODS

METHOD is a good servant but a bad master, and it is useful to appraise from time to time the value of all routine procedures This has been attempted for the methods used to control tuberculosis by Dr Jean Downes in the Milbank Memorial Fund *Quarterly Bulletin* for October, 1936 Dr Downes believes that to ascertain the effectiveness of our procedures it is necessary precisely to define the objectives of any procedure and to test accomplishment by comparison with other methods or with controls Ten per cent of 1386 cases referred by practitioners to the clinic were found to have tuberculosis, but among 1437 children surveyed in the schools no definite case of tuberculosis was discovered, and under 2 per cent from among 969 referred by the public health nurse In this country it is only practitioners or school medical officers who refer cases to the local dispensary, the other sources are negligible Considering the work from another angle, Dr Downes notes that 2 per cent of 265 examined because of contact with an infectious case were found to be tuberculous, 14 per cent of 266 seen because of suggestive symptoms—cough, lassitude, or wasting—were tuberculous, but no cases were found among 177 persons seen because of other complaints, such as back ache, indigestion, or giddiness Most instances of infection were found during the investigation of families including a primary focus of infection, next came the results from families where tuberculous meningitis had occurred, no cases were found by the investigation of families in which a child gave a positive tuberculin reaction To test the value of the increasingly efficient control two series of families were considered, one group of 51 families coming under observation from 1923–30, a later group of 41 families first seen from 1931–35 Of those from 0–19 years tested with tuberculin 74 2 of the earlier group showed infection, but only 51 6 of the later, 70 per cent of the patients of the earlier group had sanatorium treatment as against 80 per cent of those seen more recently Moreover, 44 per cent of the first group were admitted to institutions within a month and 76 per cent of the second. Contact examination has also become more comprehensive 33 per cent examined as against 51 per cent This short paper introduces no new therapeutic methods, nor does it suggest new modes of control, but it does suggest to all of us the advisability of adopting from time to time a similar survey

INDICATIONS FOR OPERATION IN PYLORIC STENOSIS OF INFANTS

THE introduction of eumydrin as an antispasmodic drug may alter the whole outlook of pædiatricians on operation for hypertrophic pyloric stenosis Meanwhile, however, some observations by Paschlau [1] may be of value His opinion is that the results would be better than they are in many centres if the indications for operation were more exact, and he recommends preliminary X ray examination after a barium meal The child is given a small feed to which a teaspoonful of barium emulsion has been added and the stomach is examined immediately after the feed and again at four and eight hours' intervals Paschlau says that if both the four and eight hour examinations show that none of the opaque meal has entered the bowel this is an absolute indication for operation More usually the stomach has emptied a little, but if after eight hours less than half its contents seem to be in the bowel, then operation is probably the treatment of choice In another group there appears to be relatively good emptying during the first four hours, but almost no further progress in the next four hours This, according to Paschlau, means atony of the stomach, and for such cases operation is also strongly recommended These are the main indications to be gained from the study of the opaque meal. The degree of peristalsis as shown by careful screen examination is said to have prognostic significance, strong peristaltic movements are held to be a good point Paschlau's other observations on the general state of the child cover ground familiar to British pædiatricians and he is also expressing an opinion current in this country when he writes of the risk of making the infant's condition worse by washing out the stomach with an alkaline solution Saline only should be used for this purpose He claims that by a careful study of the indications for operation the mortality rate from pyloric obstruction in two children's hospitals in Berlin has been reduced to just under 4 per cent

PERFORATED GASTRIC ULCER

AT a recent discussion in Brussels on the treatment of perforated gastric ulcer, Dr Robert Leclercq described [1] a case that came under his care at the Hôpital Saint Pierre in which a large perforated ulcer, situated on the lesser curvature, was so rigid and friable that all attempts at suture failed Primary gastrectomy was considered to be out of the question as the perforation had taken place twenty hours before operation Leclercq decided to close the hole by insertion of a hollow sound The manœuvre was successful. The sound used was a soft Nélaton of number 16 gauge, which was kept closed except for a short time in the morning and evening when it was used to evacuate the gastric contents The amounts of fluid obtained from the stomach on five successive days directly following operation were (in c cm) 600, 600, 500, 800, and 1200 On the sixth day the sound was definitely closed, and on the tenth day it was withdrawn A gastric fistula did not form and the wound rapidly healed Three months later the patient was readmitted to hospital Although his general condition was good he still had symptoms and the radiological examination showed considerable deformity of the stomach. A partial gastrectomy was successfully performed

The main points raised in discussing Leclercq's case were the certainty with which perforation of the stomach could be diagnosed, and the indications for and against primary gastrectomy in acute perforation Dr Leclercq was criticised by Dr Appelmans because he had made his first incision over the appendix to rule out the possibility of appendicitis Dr Appelmans said that a simple radiogram would have shown the presence or absence of air under the diaphragm If air were present, operation was urgent and the diagnosis of perforation was proved. The absence of air did not rule out the possibility of perforation, but it did mean that immediate operation was not called for, as the perforation was closed off Dr Demuylder considered that a small diagnostic incision over the appendix was permissible as it could be used, in case of perforation, for the insertion of a suprapubic drain. Dr Leclercq justified his hesitation in diagnosis by the fact that tenderness was most marked over the appendix area and that the gas bubble demonstrated in the X ray was so small that he thought it might have been caused by perforation of a gangrenous appendix. Curiously enough, Leclercq seems to have been surprised to find the stomach full although the retention of the stomach contents is one of the well established facts in cases of perforation. Dr Loute said that his practice amongst the miners in the region of Charleroi had given him an extensive experience of perforation in patients coming to hospital in poor physical condition He considered that the procedure described by Dr Leclercq was a good one and he had himself employed it He was more and more impressed with the number of cases permanently cured by simple suture Dr Appelmans spoke strongly in favour of partial gastrectomy as the operation of choice for perforation wherever the condition of the patient justified it Dr Leclercq thought that too much weight ought not to be given to the statistics which showed greater success with gastrectomy than with suture All the critically ill patients were treated by suture partial gastrectomy being reserved for specially good risks

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[1] Paschlau G (1936) *Münch med Wschr* 83 2007

[1] *J Chir Brux* November 1936 p 379

CHRONIC RHEUMATIC DISEASES

We welcomed the first report of the British Committee on Chronic Rheumatic Diseases above all for its attempt to rouse more professional interest in chronic arthritis and to feed that interest with such grains of wheat as can be winnowed from the chaff of a difficult field The feeding process is continued in the second annual volume[1] and the winnowing is careful. Prof. L S P Davidson and Dr Goldie open it by presenting a reasoned case for regarding all rheumatoid arthritis as chronic infective arthritis Their evidence is circumstantial—such points as the more frequent occurrence of antecedent infections and of infected foci in rheumatoid arthritic patients than in controls and the more frequent findings of streptococcal antibodies in their blood—but it leads them to regard infection along with sensitisation and some constitutional predisposition as the three factors together responsible for the disease Dr W S C Copeman presents a dozen cases of his own and quotes another dozen from the literature in support of the thesis that some cases of rheumatoid arthritis may be tuberculous in origin in 11 of his 12 cases Prof Loewenstein of Vienna found tubercle bacilli in blood cultures A most interesting and valuable chapter is a review of recent American researches on diseases of joints and related structures written by Dr Philip Hench of the Mayo Clinic secretary of the American Committee for the Control of Rheumatism it is a concise and critical survey of the last three or four years for which workers in this country should be most grateful. There are half a dozen shorter papers in the volume including a preliminary report by Dr E G L Bywaters of his researches in Prof Dodds's laboratory into the metabolism of joint cartilage and synovial membrane and an account of an attempt by Dr Philip Ellman and Dr Sydney Mitchell to assess the psychological features of 40 cases of rheumatoid arthritis and 40 osteo arthritics

No cure for rheumatoid arthritis will ever come out of a committee room Dr Hench says but the efforts of an aggressive committee may well provide the future discoverer of a cure with the inspiration and assistance necessary to achieve his success In that hope we trust the efforts of the British Committee will be continued and extended.

RADIUM FROM CANADA

The isolation of radium from the streak of silver radium ore near the Great Bear Lake in Canada has been progressing rather rapidly From an official statement recently issued by the Eldorado Gold Mines Limited who mine carry and refine the pitchblende it seems that unusual problems were posed by the unparalleled richness of the ore in radium The technical side of production has now been solved by the Department of Mines with the assistance of Mr L Pochon who had worked at the Curie laboratories in Paris By October 1936 the production of radium had reached two grammes monthly and the first ounce was completed on Nov 16th The capacity of the refinery is expected shortly to be trebled and orders to the value of more than £800 000 are to be met in the coming year It is stated that the market price of radium has been halved as a result of developments in Canada and there is welcome assurance that with increasing success there is no intention of raising the Canadian price to an exorbitant level.

THE BLOOD IN HODGKIN'S DISEASE

Hæmatologists do not agree about the peripheral blood picture in Hodgkin's disease, and it is useful to have Wiseman's account[1] of his findings in 31 cases which had not yet been treated by irradiation and in which the diagnosis was confirmed histologically About half the patients he says had a normal total white cell count and the number did not exceed 10 000 per c mm unless the illness was in an advanced stage—all but one of this group having much enlarged abdominal or mediastinal glands The other cases showed a slightly subnormal count, and *there was a definite tendency to neutrophilia.* Eosinophilia was sometimes found and Wiseman suggests that it is constant enough to be an aid to diagnosis though it seemed to bear no relation to the activity of the disease Approximately nine tenths of the patients had an absolute lymphocyte count below 1500 per c.mm (i e a lymphopenia) and in none did the number of lymphocytes exceed the normal. On the other hand nearly two thirds had absolute monocyte counts above 700 All cases sooner or later developed a deficiency both of red cells and of hæmoglobin associated with an increase of reticulocytes Wiseman concludes that a blood picture showing a lymphopenia with a high ratio of monocytes to lymphocytes a neutrophilia and normal total white count should suggest a diagnosis of Hodgkin's disease This cellular response he believes indicates a non pyogenic infectious agent as the cause of the disease and he regards it perhaps rather dogmatically as evidence against either a tumour process or a virus The pronounced lymphopenia in his opinion negatives lymphoid hyperplasia and he considers that the primitive reticulum cell and monocyte are primarily affected. But his suggestion of an infectious agent of low virulence and non pyogenic origin, allied on the one hand to the tubercle bacillus and on the other hand to monocytic leukæmia *is not altogether easy to follow* Finally

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[1] Report on Chronic Rheumatic Diseases being the Annual Report of the British Committee on Chronic Rheumatic Diseases appointed by the Royal College of Physicians Edited by C W Buckley M D, F R C P Number Two London H K Lewis and Co Ltd. 1936 Pp 11[illegible] [illegible]

[1] Wiseman, B. K (1936) *J Amer med Ass* 107 [illegible]

Wiseman emphasises the importance of controlling all irradiation therapy by frequent blood counts It is essential that irradiation should be withheld, whatever the clinical condition of the patient, if the total red cell count and white cell count show rapid deterioration

SEQUELS TO CHILDBIRTH

In our first issue of the New Year Dr Méave Kenny described the state of 100 women who had been treated for puerperal sepsis at the Queen Charlotte's Maternity Hospital isolation block at Hammersmith Examining them four or five years after their illness she found that no less than 87 were free from any gross lesion of the pelvic organs, such as tubal masses, uterine displacements, or vaginitis Cervicitis was noted in 5 patients only, and a tubo-ovarian mass in 2, both of whom had previously suffered from pelvic peritonitis The pelvic findings were indeed so far negative that as the investigation proceeded its interest narrowed upon what was emerging as the most appreciable residuum of the original puerperal infection—namely, sterility Among the 100 women during four to five years of the active child bearing period there had been only 5 pregnancies No contraceptive measures had been used by 26 women, and of the 69 who attempted contraception, only 22 employed methods likely to influence the coming of another pregnancy

We recall these findings of Dr Kenny's in order that they may be compared with those recorded in another illuminating article entitled Some Gynæcological Sequelæ of Natural Delivery[1] Here the author, Dr Wilfred Shaw, states specifically that he is dealing with natural confinements, not those complicated by puerperal infection, and the basis of his paper is menstrual irregularities, vaginal discharges, and uterine displacements With great fairness he assesses the importance of these annoying, if not serious, disturbances, and the treatment he outlines is both practical and clear What is most remarkable in looking at the two papers is that a woman seems less likely to suffer from gynæcological sequelæ after a severe bout of puerperal sepsis than if her delivery and puerperium are uncomplicated That this may sometimes be true is suggested by Dr Kenny's observations The patient with puerperal infection has a long period of enforced rest and good food, whereas the woman who has a "natural delivery" is soon sent home to added cares and restrictions

HISTOLOGY OF THE DISORDERED BRAIN

Histological methods of psychiatric research have not been much employed or esteemed in England since sanguine notions about the anatomy of the biogenic psychoses raised hopes that were not fulfilled This neglect of morbid anatomy, now fortunately being made good, did not obtain elsewhere, as may be recognised from the monograph recently published by Schaffer and Miskolczy from Hungary[2] Schaffer's views on the common structural features of the heredo degenerative diseases of the central nervous system have been energetically put forward for a decade, and began with his valuable earlier study of amaurotic familial idiocy In spite of the strong objections offered by Spielmeyer and others to his assertion that exogenous affections can be differentiated histologically from endogenous ones, he has not flagged and now offers a further exposition of his findings An elective and exclusive change in the ganglion cells is for him the criterion of a hereditary cerebral anomaly, with its substrate in the neuro ectodermal hyaloplasm In detailed reports on schizophrenia, senile dementia, and Pick's and Alzheimer's diseases, his pupil Miskolczy gives a well documented review of the data that confirm Schaffer's view What he says of his own observations on schizophrenia is not open to the usual criticism that only the brains of long standing cases with late secondary changes have been examined, on the contrary, he was able to enjoy the gloomy (but, for histologists, enviable) fruits of an apparently high death rate among acute schizophrenics within a few months after their admission to hospital But he is unconvincing in his efforts to rebut the accepted view that the cellular loss in the cortex is an outcome of varied processes, and not itself the primary histological change The technical discussion of the plaques and other features of senile or presenile dementia which he describes is related to schizophrenia by a final survey of the alleged evidence for a hereditary connexion between senile dementia and dementia præcox, Dr Miskolczy decides against such a connexion.

A VERSATILE SCHOOL

Meeting on Tuesday last to receive the latest annual report, the governors of the London School of Hygiene and Tropical Medicine found good reason to be pleased Within a dozen years of its establishment the school has attained a vital position in the medical life of this country, and wields great influence outside England and outside Europe It is a post graduate centre for hygiene and tropical medicine, it sets itself to give helpful answers to the innumerable questions that come from investigators, would be investigators, administrators, and practitioners all over the world, and it ranks high among our institutes of research The dean's report tells of inquiries of so many kinds that the year's total would seem respectable for a small country rather than a single school Mostly their subjects are of more immediate importance to the expert than to the profession as a whole—though it is of interest to know, for example, that Mr A E Oxford has isolated a derivative of tyramine (ergot) "which may be of very considerable pharmacological importance", that Dr Lucy Wills has shown that the hæmopoietic factor in Marmite is not identical with any of the constituents of the vitamin B complex (except possibly B_1) that Dr G P Crowden's use of reflecting surfaces to secure comfort in the tropics now extends to the provision of face masks for furnace workers and sheets lined with aluminium foil to prevent the chilling of accident victims, and that Dr Marion Watson has discovered a diet that produces a definite increase in the resistance of mice to infection by *Bacterium aertrycke* But of all the work described the most striking is certainly the joint researches of the divisions of bacteriology and biochemistry on the isolation of immunologically active chemical substances We hope to be able to publish some of this work in the near future

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We regret to learn of the death on Jan 18th, at Bembridge, Isle of Wight, of Dr Harold Waterlow Wiltshire, consulting physician to King's College Hospital, at the age of 58

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[1] *Practitioner* January 1937 p 24

[2] Anatomische Wesensbestimmung der hereditär organischen Nerven Geisteskrankheiten By Karl Schaffer and Desiderius Miskolczy *Acta med scand* suppl lxxv 1936 Pp 171

PRINCIPLES OF MEDICAL STATISTICS

IV.—THE VARIABILITY OF OBSERVATIONS

WHEN a series of observations has been tabulated—i.e. put in the form of a frequency distribution—the next step is the calculation from the series of certain values which may be used as descriptions of it and enable comparisons to be made between one frequency distribution and another. The value most commonly employed is the *mean* or arithmetic average, and frequently the worker's analysis comes to an end with this calculation. But taken alone the mean is of very limited value for it can give no information regarding the variability with which the observations are *scattered around itself* and that variability (or lack of variability) is an important characteristic of the frequency distribution. As an example Table II shows the frequency distributions of age at death from two causes of death amongst women. The mean or average age at death does *not* differ greatly between the two, being 37·2 years for deaths registered as due to diseases of the Fallopian tube and 36·2 years for those attributed to abortion. But both the table and the diagram based upon it (Fig. 5) show that the difference in the variability or scatter of the observations round their respective means is very considerable. With diseases of the Fallopian tube the deaths in the year's records are spread over the age-groups 0–5 to 70–75 while deaths from abortion range only between 20–25 and 45–50. As a further description of the frequency distribution we clearly need a measure of its degree of variability round the average. A measure commonly employed in medical (and other) papers is the *range* as quoted above—i.e. the distance between the smallest and greatest observations.

TABLE II

Frequency distribution of deaths of women in England and Wales 1934 from (1) diseases of the Fallopian tube and (2) abortion not returned as septic according to age.

Age in years	Diseases of the Fallopian tube.	Abortion not returned as septic
0–	1	—
5–	—	—
10–	1	—
15–	7	—
20–	12	6
25–	35	21
30–	42	22
35–	33	19
40–	24	6
45–	27	5
50–	10	—
55–	6	—
60–	5	—
65–	1	—
70–75		—
Total	206	79

Though this measure is often of considerable interest it is not very satisfactory as a description of the general variability since it is based upon only the two extreme observations and ignores the distribution of all the observations within those limits—e.g. the remainder may be evenly spread out over the distance between the mean and the outlying values or be bunched very closely round the mean, leaving the outlying values as very rare events. In publishing observations it is certainly insufficient to give only the mean and the range; as previously pointed out the frequency distribution itself should be given—even if no further calculations are made from it.

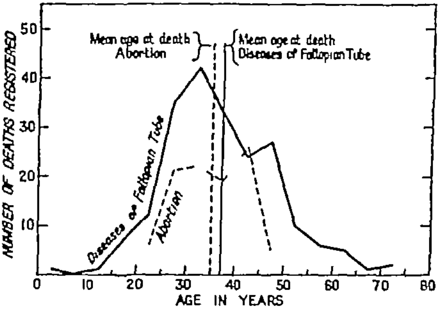

FIG. 5.—Frequency distribution of deaths of women in England and Wales, 1934 from (a) diseases of the Fallopian tube and (b) abortion not returned as septic.

STANDARD DEVIATION

The further calculation that the statistician invariably makes is of the Standard Deviation which is a measure of the scatter of the observations around their mean. Put very briefly the development of this particular measure is as follows. Suppose we have the following twenty observations of systolic blood pressure made on twenty different persons:—

TABLE III

Twenty observations of systolic blood pressure	Deviation of each observation from the mean (mean = 128)	Square of each deviation from the mean
(1)	(2)	(3)
98	−30	900
160	+32	1024
136	+ 8	64
128	0	0
130	+ 2	4
114	−14	196
123	− 5	25
134	+ 6	36
128	0	0
107	−21	441
123	− 5	25
125	− 3	9
129	+ 1	1
132	+ 4	16
154	+26	676
115	−13	169
126	− 2	4
132	+ 4	16
136	+ 8	64
130	+ 2	4
Sum 2560	0	3674

The mean or average blood pressure is the sum of the observations divided by 20 and equals 128. It is obvious from cursory inspection that the variability of the individual values round the mean is considerable. They range from 98 to 160; on the other hand, a large proportion of the values lie in the narrower range 125–135 (50 per cent. of them). The mean and range are not sufficient to describe the distribution. As a further step we may calculate the amount by which each observation differs, or deviates, from the average as is shown in col. 2. If these differences are added, *taking their sign into account*, the sum must equal nought, for a characteristic of the arithmetic mean, or average, is that the sums of the positive and of the negative deviations of the observations from itself are equal. In this example the sum of the deviations above the mean is +93 and below the mean −93. Two ways of avoiding this difficulty are possible: we may add all the deviations, regardless of their sign, or we may square each deviation so that each becomes positive. If the deviations be added in the example, ignoring their sign, the sum is 186 and the *mean deviation* is, therefore, 186 divided by 20 (the number of observations) or 9.3. This is a valid measure of the variability of the observations around the mean, but it is one which, for reasons involved in the problems of sampling, discussed later, is of less value in general statistical work than the *standard deviation*. To reach the latter the squared deviations are used. Their sum is 3674 so that the mean square deviation is this sum divided by 20 which equals 183.7. The standard deviation is the square root of this value (for having squared the original deviations the reverse step of taking the square root must finally be made) and in this example is, therefore, 13.55.

A large standard deviation shows that the frequency distribution is widely spread out from the mean while a small standard deviation shows that it lies closely concentrated about the mean with little variability between one observation and another. For example, the standard deviation of the widely spread age distribution of deaths attributed to diseases of the Fallopian tube (given in Table II) is 11.3, while of the more concentrated age distribution of deaths attributed to abortion, not returned as septic, it is only 6.8. The frequency distributions themselves clearly show this considerable difference in variability. The standard deviations have the advantage of summarising this difference by measuring the variability of each distribution in a single figure; they also enable us to test, as will be seen subsequently, whether the observed differences between two such means and between two such degrees of variability are more than would be likely to have arisen by chance.

In making a comparison of one standard deviation with another it must, however, be remembered that this criterion of variability is measured in the same units as the original observations. The mean height of a group of school children may be 48 in. and the standard deviation 6 in.; if the observations were recorded in feet instead of in inches, then the mean would be 4 ft. and the standard deviation 0.5 ft. It follows that it is not possible by a comparison of the standard deviations to say, for instance, that weight is a more variable characteristic than height; the two characteristics are not measured in the same units and the selection of these units—e.g., inches or feet, pounds or kilogrammes—must affect the comparison. In fact it is no more helpful to compare these standard deviations than it is to compare the mean height with the mean weight. Further, a standard deviation of 10 round a mean of 40 must indicate a relatively greater degree of scatter than a standard deviation of 10 round a mean of 400, even though the units of measurements are the same.

COEFFICIENT OF VARIATION

To overcome these difficulties of the comparison of the variabilities of frequency distributions measured in different units or with widely differing means, the Coefficient of Variation is utilised. This coefficient is the standard deviation of the distribution expressed as a percentage of the mean of the distribution—i.e., Coefficient of Variation = (Standard Deviation ÷ Mean) × 100. If the standard deviation is 10 round a mean of 40, then the former value is 25 per cent. of the latter; if the standard deviation is 10 and the mean 400, the former value is 2.5 per cent. of the latter. These percentage values are the coefficients of variation. The original unit of measurement is immaterial for this coefficient, since it enters into both the numerator and the denominator of the fraction above. For instance, with a mean height of 48 in. and a standard deviation of 6 in., the coefficient of variation is 6/48 × 100 = 12.5 per cent. If the unit of measurement is a foot instead of an inch, the mean height becomes 4 ft., the standard deviation is 0.5 ft. and the coefficient of variation is 0.5/4 × 100 = 12.5 per cent. again. Similarly the coefficient of variation of the blood pressure of Table III is (13.55/128) × 100 = 10.6.

These measures of variability are just as important characteristics of a series of observations as the measures of position—i.e., the average round which the series is centred. The important step is to 'get out of the habit of thinking in terms of the average, and think in terms of the frequency distribution. Unless and until he [the investigator] does this, his conclusions will always be liable to fallacy. If someone states merely that the average of something is so and so, it should always be the first mental question of the reader: "This is all very well, but what is the frequency distribution likely to be? How much are the observations likely to be scattered round that average? And are they likely to be more scattered in the one direction than the other, or symmetrically round the average?" To raise questions of this kind is at least to enforce the limits of the reader's knowledge, and not only to render him more cautious in drawing conclusions, but possibly also to suggest the need for further work' (G. U. Yule. Industrial Health Research Board, Report No. 28, 1924, p. 10).

EXAMPLES OF VARIABILITY

The practical application of the measures of variability may be illustrated by the figures below which are taken from a valuable statistical study of blood pressure in healthy adult males by P. L. McKinlay and A. B. Walker (*Edinb. med. J.* 1935, 42, 407). In the original the full frequency distributions are set out (see Table below).

The variability of these physiological measurements which is apparently compatible with good health is striking. It leads the authors to conclude that we must hesitate to regard as abnormal any isolated measurements in otherwise apparently fit individuals. Some of the measurements they found are definitely within the limits regarded as pathological and study is necessary to determine whether such large deviations from the "normal" have any unfavourable prognostic significance. It is clear that the mean value alone is a very insecure guide to "normality."

As a further example of the importance of taking note of the variability of observations the incubation period of a disease may be considered If the day of exposure to infection is known for a number of persons we can construct a frequency distribution of the durations of time elapsing between exposure to infection and onset of disease as observed clinically If these durations cover a relatively wide range, say 10–18 days with an average of 13 days it is obvious that observation or isolation of those who have been exposed to infection for the *average* duration would give no high degree of security For security we need to know the proportion of persons who develop the disease on the fourteenth fifteenth &c day after exposure; if these proportions are high—i e the standard deviation of the distribution is relatively large—isolation must be maintained considerably beyond the *average* incubation time In such a case *the importance of* variability is indeed obvious but there is a tendency for workers to overlook the fact that in *any* series of observations the variability large or small is a highly important characteristic

Means Standard Deviations Coefficients of Variation and the Range of Measurement (based on 566 observations)

—	Mean	Standard deviation	Coefficient of variation *	Range.
Age (years)	23·2	4·02	17·31	18– 40
Heart rate (beats per minute)	77·3	12·83	16·60	46–120
Systolic B P (mm)	128·8	13·05	10·13	97–168
Diastolic B P (mm)	9 7	9·30	11·76	40–108
Pulse pressure (mm)	49·1	11·14	22·35	24– 82

In actual practice the calculation of the standard deviation is not usually carried out by the method shown above—i.e by computing the deviation of each observation from the mean and squaring it Shorter methods are available both for ungrouped observations (like the twenty measurements of blood pressure in Table III) and for grouped observations (like those in Table II) These methods are described fully in many text-books—e g., Woods and Russell.

SYMMETRY

Another characteristic of the frequency distribution is *its symmetry or lack of symmetry* With a completely symmetrical distribution the frequency with which observations are recorded at each point on the graph or within certain values below the mean is identical with the frequency of observations at the same point, or within the same values above the mean. With asymmetry the observations are not evenly scattered on either side of the mean but show an excess on one side or within particular values—e g with a mean of 50 observations below the mean may not fall below 20 units from that point the lowest observation recorded being 30 while on the positive side of the mean observations 40 units *above the mean may be observed* values of 90 being recorded The tabulated distribution and still more a graph of it will afford an *indication* of this characteristic.

Summary

As descriptions of the frequency distribution of a series of observations certain values are necessary, the most important of which are usually the mean and standard deviation The mean alone is rarely if ever sufficient In statistical work it is necessary to think in terms of the frequency distribution as a whole taking into account the central position round which it is spread (the mean or average) the variability it displays round that central position (the standard deviation and coefficient of variation), and the symmetry or lack of symmetry with which it is spread *round the central position*

A. B H

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* These are the figures given in the original. According to the values of the mean and standard deviation the final coefficient of variation is 22·60 Probably the original calculation was based upon the values to a further number of decimal places.

SPECIAL ARTICLES

SOME ASPECTS OF INFANT NUTRITION *

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The subject of infant nutrition is a wide one and this article concerns certain aspects only and in particular the type of material with which we deal in Alder Hey our methods of investigation and treatment and the conclusions at which we have arrived as a result of 3½ years minute observation of 4036 infants under one year In order to investigate our material we divided the children of this age into weight groups. Of the deaths in children in these groups 60 per cent occurred in those who were more than 20 per cent below average weight This serves to show what an important part the infant service plays in the work of the hospital, and how necessary is a right understanding of the disorders and nutritional needs of these small patients They require unremitting care and watchfulness on the part of the nursing staff They are apt to change quickly for the worse on the other hand one often observes an almost miraculous change as the result of 24 hours intensive treatment so that it is our practice never to give up hope until an infant is actually dead

Methods of Investigating Faults

If a baby is brought to us with the complaint of any nutritional disturbance—i.e diarrhœa vomiting or failure to gain weight—we invariably approach the problem by assuming that there is (1) something wrong with the feed (2) something wrong with the baby or (3) something wrong with both

THE FEED

We first examine the history carefully noting the type of feed the precise amounts given the addition of sugar and vitamins and the intervals at which they are given The child's reaction to each feed is ascertained—that is to say whether he has gained or not the type and frequency of the stools whether vomiting has occurred or not and if he seems satisfied A careful analysis is then made to see if the feed fulfils the rules laid down for the correct feeding of infants, for it is absolutely essential to have rules The baby who, for any reason, has not the good fortune to be fed by its mother is at a grave disadvantage The finding of a suitable substitute for this perfect food should exercise all our ingenuity It should fulfil the following requirements —

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* A paper read to the Maternity and Child Welfare section of the Society of Medical Officers of Health on July 4th 1936

(1) The energy value should be adequate—i e , 45–50 calories per lb expected body weight

(2) There must be no harmful bacteria

(3) It must be easily digestible

(4) There must be enough protein, carbohydrate, mineral salts, water and vitamins A, B, C, D

There is enough protein if 1½ oz cow's milk per lb body weight per day is given As at least this amount is required to meet the calorie requirements we need not calculate the protein content separately, and it can be neglected when milk and water mixtures or dried milks are used It will be found to be deficient in many of the patent foods and condensed milks For the carbohydrate there are various rules For normal babies it is safe to give 1 oz sugar a day under 3 months, and 1½ oz a day from 3 months to 6 months Starch may be added after 6 months The volume of feed taken should approximate 2½–3 oz per lb body weight per day

The most usual cause of failure in artificial methods is underfeeding This may be qualitative or quantitative, or both , or qualitative underfeeding may be combined with quantitative overfeeding—i e , the calorie value is too low and the volume too large The baby fails to gain because its stomach is distended The mother thinks the feed is too strong and makes it more dilute, instead of cutting down the amount of water added Other errors are too frequent feeds, and feeds too low in protein and too high in sugar, as in condensed milk

THE BABY

Having noted which symptoms of nutritional disturbance are present—i.e , diarrhœa, vomiting, failure to gain weight—we proceed to look for their cause A careful physical examination is made In the osseous system the size of the fontanelle is measured and the skull palpated for cranio tabes, which we have found to be as common in wasted infants as in rachitic or syphilitic infants A minute examination is then made of the other systems to find infection, if present The nasopharynx, the tongue, the buccal mucosa, and the fauces are examined very carefully The tympanic membranes are inspected by means of an electric auriscope, with specially constructed oval speculum The heart and lungs are auscultated, and the liver, spleen, and glands palpated Any skin lesions are noted The state of the tissues, if there has been recent loss of fluid or of fat—the difference between dehydration and emaciation—is of profound importance in influencing treatment Finally, congenital abnormalities are noted

The following special tests are then carried out intradermal tuberculin injections as a routine , Wassermann reactions where suggested , hæmoglobin, when anæmia is suspected , urine and stools routine examinations and culture , and radiography when indicated Biochemical examinations are performed, such as sugar tolerance curves on wasting infants, estimation of alkali reserve in severe diarrhœa and vomiting, and blood urea when we suspect renal failure Blood calcium and phosphorus are estimated in early rickets and tetany

Types of Nutritional Disturbance

The following classification is in use —

(1) Athrepsia infants more than 40 per cent below average weight for age

(2) Hypothrepsia those who are 20–40 per cent below average weight

(3) Dyspepsia

(4) Fermentative diarrhœa

(5) Infectious diarrhœa

(6) Parenteral diarrhœa

ATHREPSIA AND HYPOTHREPSIA

We have abolished the use of the term marasmus, for we found it was apt to be used loosely to describe any nutritional disturbance, and not merely for children who had wasted Moreover, it was often regarded as a diagnosis in itself Athrepsia and hypothrepsia denote definite degrees of underweight, the former being more or less synonymous with the gruesome term "dekomposition" of the German writers and the "atrophy" of English writers The cause is uncertain There is often a "constitutional" element present, whatever that may mean Congenital abnormalities such as heart disease and syphilis are associated with wasting, and there may be achlorhydria Infection may be a factor, or the child may have been underfed for a long time Whatever is causing the condition, there is a breakdown in tolerance—i.e , in the ability of the child to digest and assimilate its food When such a breakdown has occurred, he should be fed on his basal requirements only, that is, about two thirds of optimum previously outlined No quantity gain (or gain in pounds and ounces) is likely for some time, but quality gain (or freedom from symptoms) is expected This quality gain is the period of repair, and is very real and definite When in spite of his weight line being flat the baby begins to look happy and active with a pink colour, glossy skin, formed stools, and no vomiting, repair has begun and the feed can be gradually increased to optimum requirements, when he should put on weight When a baby is not gaining weight one is tempted to raise the calorie value of the feed He may gain for a day or two but the weight line will become flat for a time and will then drop This is the so called paradoxical reaction to food, which occurs when the feed is raised before tolerance is re established One has only to experience this a few times to realise how very cautiously the infant's feed should be increased when he has not gained for a considerable time and one suspects a breakdown in tolerance

In order to give the underweight infant its optimum requirements a high calorie, low volume feed is needed. One finds it impossible to give enough calories without giving too large a volume if milk and water feeds are prescribed (This refers only to underweight children , milk and water feeds are satisfactory for normal babies) In this hospital we use lactic acid milk, with the addition of as much as 7½ per cent of commercial glucose , it is not pure but consists of a mixture of dextrose, maltose maltodextrin, and dextrin, which is an advantage The energy value of this feed is 30 calories per ounce Lactic acid milk is prepared by the addition of lactic acid (B P) to whole milk, which leads to the neutralisation of a portion of the buffer substances present, so that when the milk is given the degree of acidity attained in the stomach approximates that when human milk is fed Owing to this increased acidity one is able to use undiluted milk, and thus a high calorie feed is available Alternatively, we u

Czerny's butter flour mixture with added milk which has 24 calories to the ounce The mixture is taken well by infants who fail to gain but do not vomit or have loose stools but it should never be used for vomiting babies While these infants are reviving their tolerance subcutaneous salines are given with 5 per cent. glucose in order to maintain the fluid content of the tissues In addition to their feeds vitamins A and D are supplied in the form of Adexolin 3 drops in each feed Orange juice is given daily up to 3 teaspoonfuls Iron in the form of ferric ammonium citrate is given daily in small doses increasing up to 9 grains

If the infant fails to gain and yet has no symptoms of dyspepsia as evidenced by diarrhœa or vomiting we suspect that there is absorption but no assimilation Sometimes gain in weight can be obtained at this juncture by giving insulin or thyroid In the absence of any symptoms pointing to thyroid deficiency or of any definite indications from the sugar tolerance curves our practice is first to try insulin If the baby does not gain or even loses weight we stop its administration and after a few days rest try thyroid Insulin is given half an hour before meals the initial dose is 1 unit the amount being cautiously increased The nurses are instructed to watch for signs of hypoglycæmia and they know what to do should this occur We have an infant in the hospital who has a diabetic curve and who has been having until recently 20 units of insulin daily an enormous dose per pound body weight when compared with adult dosage He has gained steadily since insulin was started, and recent curves show that he has reacquired his tolerance to sugar One finds that the liver enlarges during insulin administration presumably owing to glycogen storage Whether this is deleterious in the long run or not I cannot say Thyroid and insulin are the only endocrines which we have used, but we are hoping to try Eucortone in the near future

There is one more measure that we sometimes adopt in the treatment of athreptic and hypothreptic infants That is blood transfusion The blood is injected slowly into the external jugular vein (never into the longitudinal sinus) We have not been greatly impressed with the results of these transfusions

If the infant fails to improve after all these measures and if he fails to absorb and assimilate his basal requirements he will go downhill and die There are several ways in which this may happen He may lose weight and acquire a terminal diarrhœa This diarrhœa is due to general depression of the function of the body cells and failure to absorb both the fluid administered and the pancreatic and intestinal secretions It is an inanition diarrhœa and infants succumbing in this way should not be said to die of gastro-enteritis It is not an enteritis for there is no inflammatory condition of the bowel It is merely a sign of cessation of function and so of absorption The child may acquire a parenteral infection—nasopharyngitis otitis media or pneumonia which may be accompanied by parenteral diarrhœa. Dehydration intoxication and death end the scene He may die from thrombosis of the venous sinuses This depends on concentration of blood and decrease of blood volume which is associated with states of malnutrition and dehydration The blood tends to stagnate in the sinuses and thrombosis occurs It should stimulate us to be assiduous in giving parenteral fluids while the infant is trying to acquire tolerance again Clinically the child becomes quiet the colour is greyish and there is pyrexia It reminds one of cerebral hæmorrhage seen in the new born infant we have verified several of these cases post mortem Or finally he may develop a terminal uræmia as a result of renal failure This, however is usually secondary to dehydration and intoxication.

DYSPEPSIA

We put early feeding errors such as underfeeding vomiting due to overfeeding—quantitatively qualitatively or both—into the class of dyspepsia It is the early stage of a breakdown in tolerance

FERMENTATIVE DIARRHŒA

Overfeeding with carbohydrate causes fermentative diarrhœa which is seen par excellence in babies fed on condensed milks and other patent foods Many patent foods do not contain enough fat and protein being filled up with excess carbohydrate because of its cheapness As a result of this excess water is held in the tissues and the baby becomes hydrolabile— water baby These infants on high carbohydrate feeds gain weight on account of this bound water They lose weight and go downhill very quickly when they acquire an infection as the water is released from the tissues The stools in this type are acid frothy and frequent The treatment is to give by mouth only sterile water or Ringer's or half-strength saline for 24 hours Then small feeds of protein milk are given; we use calcium caseinate added to skim milk The stools become alkaline there is putrefaction instead of fermentation The intestine is rested and a cure usually results The infant is gradually put on to a suitable feed for discharge

INFECTIOUS DIARRHŒA

By infectious diarrhœa we mean that in which an organism can be isolated from the stool and held responsible for the disease It manifests itself clinically by pyrexia accompanied by the passage of loose and frequent stools which may contain blood and mucus In some cases however blood and mucus are not seen and the disease is not so easy to recognise especially as it may be complicated by or accompany parenteral symptoms

If not seen and treated early it leads to dehydration and intestinal intoxication as does any unchecked diarrhœa In routine examination of infants stool paradysentery bacilli such as the Morgan bacillus are frequently isolated Some of the infants in whose stools these organisms are found show no nutritional disturbance It is difficult to know exactly how much importance to attach to these findings

The *prophylactic* treatment of infectious diarrhœa is of paramount importance All infants under the age of nine months are cot isolated Nurses and doctors wear separate gowns for each infant and wash and disinfect their hands before and after handling them The feeds are prepared by a special staff in the milk room A fierce war on flies is waged by means of fly swatters and fly papers Fly screens are attached to the windows of the baby ward The *curative* treatment is to cut down the food till tolerance is reacquired and to restore body fluid by giving parenteral salines We have tried Morgan vaccines on a few cases but have not found them to be of much benefit

PARENTERAL DIARRHŒA

The diarrhœa that accompanies parenteral infections such as nasopharyngitis otitis media tonsillitis bronchitis and pyelitis we term parenteral diarrhœa If an infant who is on a well constructed feed and is gaining weight and looks well, suddenly starts to vomit or has a loose stool, we immediately look for a focus of infection The mouth, throat, ears, chest, and urine are carefully examined Most often, a lustreless, tympanic membrane is found If left alone and examined again the following day it will probably be injected and bulging slightly If a myringotomy is performed at this stage and pus is obtained, one is often gratified by the immediate cessation of symptoms, followed by gain in weight Such a happy train of events, however, does not always occur In a previously healthy infant the outlook is good, but in the undernourished and debilitated, mastoiditis is a frequent sequel to otitis media

One of the most difficult problems in the treatment of infants is the indications for mastoidectomy In general, if any infant has had a discharging ear for more than two weeks and shows no signs of improving, mastoidectomy should be considered But there is another large group of cases in which there are no localising symptoms, when we can only guess at the presence of pus in the mastoid by the severe toxæmia of the patient This may sound far fetched, but it is true We were recently impressed by the number of cases of diarrhœa and vomiting which came to post-mortem, in which extensive mastoid disease was discovered I do not refer to the presence of mucopus in the antrum, which I am aware is often a terminal event, but to cases in which the mastoids were severely infected, and the disease so extensive that the condition could almost be described as osteomyelitis of the petrous portion of the temporal bone In some of these cases we had suspected ear disease and performed myringotomies In some, however, there had been no changes in the tympanic membranes which suggested the diagnosis At this time we tried to decide which cases of diarrhœa were probably due to mastoid disease Clinically, those in which toxæmia was present, when vomiting was severe, seemed to be most often associated with mastoid disease In order to try to save some of these infants, we performed several mastoidectomies on babies with severe diarrhœa and vomiting but no definite localising symptoms The results were interesting The infants all survived the operation for at least 12 hours Those in whom the disease was extensive died within 24 hours Some were no worse but did not improve In a few pus was not found in the mastoid But there were several cases in which the results justified the procedure, as from the day following the operation they began to gain steadily, lost their diarrhœa, and ceased to vomit The results on the whole are therefore discouraging, probably because the operation is not undertaken early enough I believe that it should be performed far more often The difficulty is to select the right cases

Of the other parenteral infections, pyelitis is more likely to cause vomiting than diarrhœa Any of the other infections including syphilis and tuberculosis, may lead to diarrhœa

Treatment

PARENTERAL INFECTIONS

Myringotomies and mastoidectomies have already been dealt with The rest of the treatment of parenteral infections is mainly prophylactic In order to prevent the children from acquiring infections in hospital we wear masks over the nose and mouth when attending to them. We are much more dangerous to them than are their parents, because we are in repeated contact with organisms to which we acquire a partial immunity To the infants we are thus a source of danger as carriers We do not claim that the masks prevent all possibility of infection passing to the child, but we do think that they serve to remind us not to breathe over him, and we hope that they may dilute the dose of the organisms expired.

Infants who acquire the so called "gastro enteritis" in hospital nearly always suffer from a parenteral infection The sore throat of the nurse or medical officer is reflected in the stools of the infant. Again and again we have proved this to be true When an epidemic of loose stools occurs in a baby ward, our practice is to examine and swab the throats of the nurses on the ward and the medical officer Usually one of them is found to harbour a hæmolytic streptococcus

Since the wearing of masks these epidemics have fortunately been infrequent The fact that they do still occur at times serves to remind us that our masks are not infallible As a further prophylactic measure we instil 2 per cent ephedrine in oil into the nostrils of all infants, thus shrinking the mucous membrane of the nasal passages and promoting better drainage Also, we nurse the babies sitting up in the Fowler position This is because they are at a disadvantage compared with adults in that their Eustachian tubes are short and wide Thus when lying supine, nasopharyngeal secretions flow readily into the middle ear, hence the frequency of otitis media in hospitalised babies

DIARRHŒA AND VOMITING

We have now discussed *fermentative, infectious, and parenteral diarrhœas at some length* Whatever the cause of the diarrhœa, if it has persisted long enough, the end result is the same—severe anhydræmia or, as some prefer to call it, intestinal intoxication The immediate need is to restore body fluids If acidosis is present, alkalis should be given, if alkalosis, chlorides, if ketosis, glucose. We can determine the alkali reserve by Van Slyke's method, and administer fluids accordingly In actual practice, however, we rarely do this We give, instead, Hartmann's solution, which is so constituted that it combats acidosis, alkalosis, and dehydration.

If vomiting is severe we give intravenous glucose in Hartmann's solution If vomiting is *not* severe we rely on subcutaneous 5 per cent glucose in Hartmann's, given eight-hourly to overcome dehydration. Subcutaneous salines are efficient in overcoming dehydration, whereas intravenous glucose is a valuable method of dealing with ketosis Hypertonic injections of glucose intravenously can with advantage be combined with the intraperitoneal injection of Ringer's or normal saline, or Hartmann's solution. The hypertonic glucose draws the weaker solution from the peritoneal cavity into the blood stream, thus serving to dilute the toxins and promote diuresis

In some cases where diarrhœa is severe *and incessant* continuous intravenous fluids are given. A blunt needle is tied into the saphenous vein *Fluid* is allowed to drip in at the rate of 1–2 c cm. per lb body weight per hour

We use no drugs in the treatment of diarrhœa with the exception of kaolin (aluminium silicate) which is said to adsorb toxins and remove them from the stools It is valuable in the early stage of diarrhœa

For children over one who are not needing paren ral fluids we give raw sieved apples four hourly 'e have been favourably impressed with this treatment The children take the apple readily and are ore contented than when they are fed on an entirely uid diet. Apple is filling, and they acquire a omforting sense of repletion

THE DEFICIENCY DISEASES

I do not propose to deal exhaustively with rickets urvy and nutritional anæmia, but to make a few marks on the treatment of rickets Most cases of ckets heal readily with the mercury vapour lamp nd cod liver oil, of which it is important to give nough or healing is long delayed 3000 international nits are needed daily to cure and 1500 units to *revent rickets That is to say 1500 units daily* hould be taken by the end of the first year his amount is contained in 1 5 c.cm Radiostoleum 5 c cm. Adexolin or 3–4½ drachms of cod liver oil epending on the standard used Twice these doses re needed if the child actually has rickets If the od liver oil emulsion is used very much larger doses re necessary As we find the amount of cod liver il required daily is more than a great number of hildren could tolerate we reinforce it in this hospital ith radiostoleum. We add 1 c cm of radiostoleum o 1 oz of cod liver oil By this means the vitamin ontent of the oil is raised so that 2 drachms daily i prophylactic and 4 drachms daily a therapeutic dose.

AFTER CARE

So much for our method of treatment in hospital When an infant is gaining weight on a suitable feed hat is one which fulfils the requirements already aid down it is discharged as cured. The mother is iven precise instructions in the milk room as to he preparation of the food The maternity and hild welfare service is notified of the discharge nd the health visitor visits the child in its ome, and sends a report back to the hospital on the ondition of the infant and on the parents capacity o carry out instructions These reports are extremely aluable The children are referred to clinics and re asked to attend the after care clinic in the hospital t least once so that we can see whether or not they ave progressed since discharge

Conclusion

An attempt has been made to outline the methods of investigation and treatment of the infants at Alder ley I cannot help feeling that the treatment of nfants in hospital is not satisfactory They are more han metabolic problems Apart from the risks they un in catching infections they require a normal ome environment—i e the caresses and attentions of their parents and the presence of brothers and isters

T Brenneman of Chicago says (*Amer J Dis Child* 1930 40 12) —

> The herding of infants in separate wards where the ndividualisation and mothering of the home are wanting where exposure to infection of the respiratory tract leads o more institutional casualties than one can contemplate with serenity of mind and of heart is fraught with such danger that one wonders if it were not better to abolish them altogether In our hospital we have tried to meet the situation both by not admitting the type of case that is still commonly admitted and by discharging others at the earliest possible moment The baby clinic department and the out patient department has thus grown at the expense of the infant ward.

I heartily concur with every word

I should like to finish these remarks with a plea for the encouragement of breast-feeding Breast fed infants rarely fall victims to the maladies outlined in this paper If breast feeding were more universal the baby wards would be emptier and fewer infants would be called upon to brave the dangers of hospitalisation. The breast fed infant rarely succumbs to infection

I am indebted to Dr W E Crosbie for permission to publish this paper and for much helpful criticism.

HOSPITAL PLANNING AND DEVELOPMENT

"*A serious responsibility rests upon all who build* hospitals. They must not forget how long lasting are mistakes which are embodied in steel and concrete A hospital in its every section must be planned for its work There is reason to fear that, even to-day hospitals are being built which do not fully conform to that basic *principle*

This passage appears in an interesting section on hospital planning and development included in Sir Frederick Menzies s latest report on general and special hospitals.[1] The London County Council have determined to standardise the dimensions of certain types of sick ward to be erected in future at the general hospitals under their control—viz single bedded wards and large wards of the type which must still be considered the normal type that is to say those in which the beds are placed on either side of the ward and project at right angles from the side walls' The standards decided upon are as follows :—

Single-bedded Wards

Minimum floor dimensions		11 ft by 10 ft.
Minimum height		10 ft

Large Wards

(*a*) Wall space per bed	Acute wards	8 ft
	Chronic wards	7 ft (8 ft. if often also cases are treated)
	Cot wards	7 ft.
(*b*) Width of wards of all types		26 ft.
(*c*) Height		11 ft. (up to a length of 60 ft) 12 ft. (when the length exceeds 60 ft)

These dimensions afford rather more than 100 sq ft of floor area per bed for the acutely ill and 90 sq ft for chronics The longitudinal and lateral standards are justified not only on grounds of comfort and well being of the patients but also by the convenience of the staff and the efficiency of their work More than once it is emphasised that they have not been reached from theoretical considerations but are based on practical experience and we are reminded that that eminently practical authority Florence Nightingale prescribed them in 1863 although subsequent experts on hospital design have frequently departed from them On the financial side it is mentioned that each additional foot of ward width costs only £1 per bed, but it is hardly a just comparison to place against this figure as the report does a reasonable total cost of £800 per bed for initial hospital construction The latter figure includes all buildings such as staff quarters laundry engine house kitchen &c The real additional expense of added width would be better stated in relation to the estimated average cost per bed of a ward-block only Even then it would represent a relatively small proportion

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[1] London County Council Annual Report of the Council 1935. Vol IV (Part I) Public Health—General and Special Hospitals. London: P S. King and Son Ltd. 2s 6d.

Most administrators of hospitals will probably agree with standards providing 8 ft bed centres and 26 ft ward-width, although it is doubtful if a modernly furnished and equipped ward need exceed 24 ft While wards intended for infants and young children may quite conveniently be narrower, it is probably wise to provide for the contingency that these wards may come to be used for adults For the same reason, and because the dangers of droplet infection are far greater in children's wards, there may be some doubt as to whether there is justification for reducing the wall space in their case from 8 to 7 ft Window spacing in this type of ward conforms to bed spacing and stereotypes the arrangement of the beds, whether they are used for adults or children The standards of height laid down are also generally accepted in modern hospital construction As Sir Frederick says, variations in height affect building costs to the greatest extent The arguments used in reference to the condition of air in a ward would, however, if applied to the patients' comfort and well-being, hardly support the sweeping and rather dangerous statement that "appearance is the single consideration which should govern the height of wards" This is very nearly true, but not quite

BED ALIGNMENT

It is not clear from the report whether Sir Frederick accepts the view that the type of ward which he describes as "normal" is also the best Probably it has been thought that wards of a design common in other countries, but rarely seen in our general hospitals, are still at too experimental a stage to permit of standardised dimensions If, on the other hand, the L C C propose to adhere to the orthodox British type of ward, the reference, quoted above, to mistakes embodied in the modern structural materials "steel and concrete" may be prophetic Apparently, however, the L C C are themselves prepared to experiment, for a scheme for a large extension of the North Eastern Hospital (for infectious diseases) which was described in a report of the hospitals and medical services committee, dated Oct 18th, 1934, included eight ward blocks each with two wards of 20 beds divided into bays of four beds each by dwarf glazed screens Each of these wards is T shaped with sun verandahs at the ends We understand that the beds in these new wards are arranged parallel to the external walls, except at the angles where the peculiar design renders this impossible

The opening of the new Southend General Hospital in 1932 aroused interest in this type of bed alignment As will be seen from the accompanying photograph (Fig 1) the window spaces have been so arranged that the beds may be set parallel to the wall in pairs the occupants facing one another, and separated by partially glazed screens from the next group Each bed or each pair can be completely screened off from the rest of the ward and the patients have a view from their windows without glare Obviously such a ward can carry rather fewer beds per unit of length, if working space is left between the feet of opposite beds but it is reasonable to suppose that the ward may be made somewhat narrower than usual without causing inconvenience A similar bed arrangement has been adopted in the New Sussex Hospital, Brighton Middlesex Hospital has also wards of this kind for special departments, and apparently has contemplated applying the idea to double width wards, presumably with two rows of beds on each side

FOR AND AGAINST THE NEW STYLE

In the first design of the Birmingham Hospital Centre this modern tendency was followed, but the board after very careful consideration, reverted to the old style The arguments for and against the two systems are briefly as follows In the "normal ward a nurse has an uninterrupted view of the faces and demeanour of every patient Moreover, the maximum concentration of patients is permitted with the minimum travelling distance for the staff and the longest striking distance of droplet infection for patients facing each other It is maintained by some hospital administrators that patients like a full view of all that is going on in the wards Wards of this type, being lighted on both sides, and also often at one end, are bright Their structure is simple, the spaces between windows and beds being uniform On the other hand, the advocates of a different arrangement plead that the complete publicity of the open ward is objectionable to many patients, and that the untoward events which occur openly in such wards are psychologically bad for the other inmates The glare from the windows

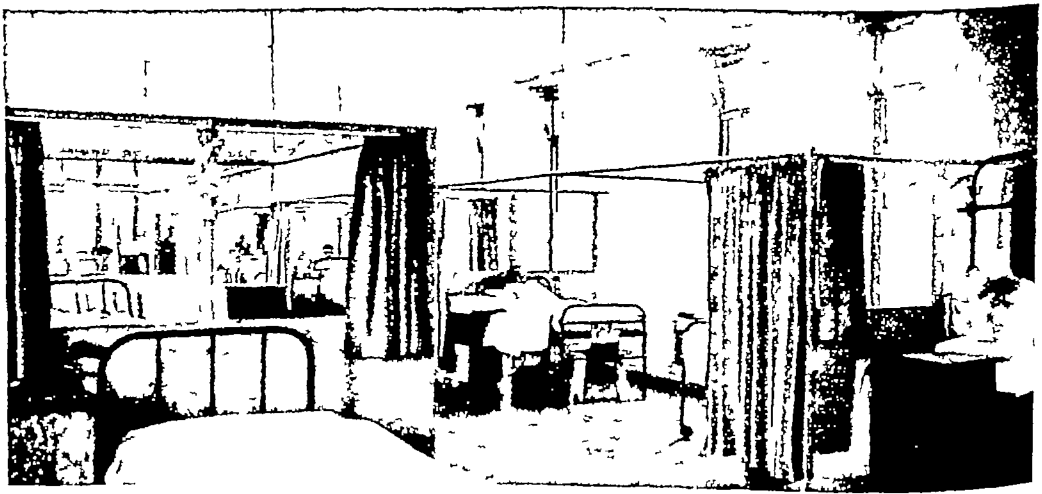

FIG 1 —A medical ward at the Southend General Hospital showing lengthways arrangement of the beds.

[Photograph by [illegible]

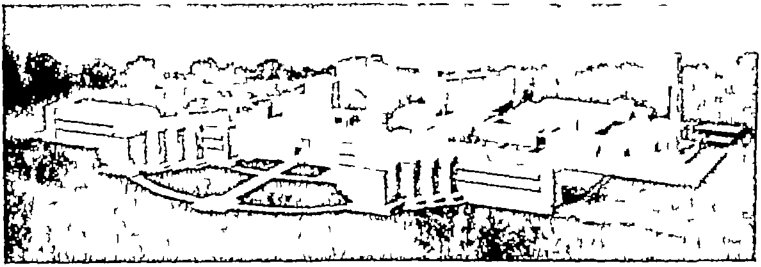

FIG 2.—Model of the Sully Tuberculosis Hospital Cardiff by the architects Messrs William A Pite Son and Fairweather

Photograph by Degnand & Son

on the other side which each patient faces have been proved, they say to cause harmful effects such as headaches Lengthwise arrangement of the beds is claimed to obviate glare and at the same time to afford the patient a view from the window along side of which his bed is set Partitions at the head of each facing pair of beds with in addition curtains suspended from rails round each bed provide an opportunity for varying degrees of privacy which the supporters of the arrangement believe there is plenty of evidence the patients desire Radiators also can be so placed that heat is not most intense at the patients heads where it is least wanted and warmth and ventilation in winter or during excessive summer heat are more easily adjusted It is said that no patient who has been treated in such a ward is happy if he is transferred to one of the old style Critics reply that a nurse has difficulty in supervising the patients whom she cannot readily see that she and other members of the staff have further to walk per bed for each item of service that there is less room for groups of students to surround a bed in teaching hospitals that the desire for privacy is exaggerated and that in any case it is more difficult to secure that privacy at crucial times since in ordinarily planned hospitals the patient would be overlooked from the windows of adjacent blocks.

Dr William Evans who had experience of the new style at Southend and who is definitely in favour of it permits us to use some comments he has made in a private communication As to supervision he is assured by the sister of a medical ward that, after three years experience she would never now desire to revert to the old arrangement When it was suggested that there was need for more accommodation the nurses were anxious that it should not be obtained by conversion to the orthodox arrangement. There is no inconvenience in teaching students since the bed is not contiguous to the wall, as our illustration shows (incidentally it may be said that the number of students who can profit from any sort of bedside teaching at one time is obviously limited) When the patient is screened off he is still in a well lighted compartment comparable to a private room There is less disturbance of sleep at night by the unavoidable activities in other parts of the ward As the patient has at no time more than four patients within view it is easy to protect him from the distress or gloom which results from seeing others who are gravely ill a psychical factor which Dr Evans regards as important In the same category is the outlook on the external world which the patient has from his own window From the surgeon s point of view Sir William Wheeler regards the new arrangement of beds as better for everybody for it makes it possible at any time to convert the space occupied by a patient into a miniature ward whether for detailed examination for recovery from an anæsthetic or for critical illness But he admits that the usual arrangement of beds is more economical of space

The likes and dislikes of patients are difficult to assess Few of them have experience of more than one kind of hospital ward and if they are contented or dissatisfied the cause is just as likely to be temperamental as founded on reason A sociable person who is not too ill may like the bustle of an open ward but the sensitive who may feel most the lack of privacy are probably least likely to open their minds Careful comparisons of the patients reactions under the two systems by such unprejudiced observers as Dr Evans is required to settle this point but we may also ask how we should feel about it if we ourselves were unprivileged patients Long suffering silence is not necessarily evidence of lack of preference Nurses too readily accommodate themselves to conditions and, if they are not temperamentally fault finders are apt to think that system best to which they have become accustomed There would seem to be little advantage in an outlook from a window which is circumscribed by neighbouring blocks or perhaps only their roofs On the other hand the objection to being overlooked by other windows is not insurmountable curtains on windows would be a small extension of the curtains round the beds and are essential to privacy Indeed if the normal healthy person prefers to sleep in a darkened room it is difficult to see why a patient should be wakened by the early summer light in our barrack like hospitals

THE LESSONS OF TUBERCULOSIS

The whole question of hospital situation planning and internal arrangement requires study by the medical and nursing professions There is evidence that architects are eager to experiment with ideas derived from foreign experience Professional caution and perhaps superiority on our part tends to hold them back And yet we have plenty of variety in construction in our own country if we knew where to look for it Since 1912 sanatoria and hospitals for tuberculosis have sprung up like mushroom Their design was originally derived from foreign sources but has been modified to meet the exigencies of our climate Essentially they are built to catch the sun, the patients quarters facing south with small wards, sometimes subdivided in the way we have been discussing, and many single rooms, with wide windows opening on to terraces, balconies, or verandahs, and with well lighted and ventilated passages joining the wards on their north side (see Fig 2) Ready and noiseless means of summoning aid are provided, and, it may be noted, these institutions are not without their emergencies To an increasing extent their patients are the subject of major surgical interference Nearly all the women and most of the men are said to prefer single rooms, when they get accustomed to them Nurses trained in "normal" hospitals readily adapt themselves and find no serious administrative difficulty It is true that their design would be wasted in congested urban sites, for outlook is one of their features, but there are few nowadays who would choose such sites for new hospitals There need be no limit, within the range of structural practicability, to their height, communication by elevator taking the place of the long march from ward to ward which a large, openly spread hospital of the old style entails Those who are planning new hospitals might profitably study the experience of the larger tuberculosis authorities They would find answers to many of their doubts and queries There is much more involved than mere bed alignment

MEDICINE AND THE LAW

Rhabdomancy

EARLIER in the present month the newspapers reported that the services of a water diviner had been employed in the attempt to discover a little girl, aged ten, who was missing from her home at Newark The diviner carried with him a sock worn by the child It was stated that, at one point in his perambulation of the ground, the diviner felt fairly confident there must be something belonging to the girl at that spot

Amid all the controversy between superstition and rationalism, water divining remains a reputable profession in many parts of the country Did not Moses strike the rock with his staff and did not the waters gush forth? If the problem is not so much to indicate the presence of subterranean water as to find it available at a reasonable depth, diviners' rods continue to point to the site of prospective wells and the back breaking labour of well-sinking is undertaken more readily *on that account* The detection however, of buried treasure, missing bodies, and elusive criminals by means of the divining rod is an extension which folklorists can study without the necessity of firm belief Sir George Hill's recent book on "Treasure Trove" mentions the condemnation in Norwich Cathedral in the *fifteenth* century of a woman who brought *a* holly wand (given to her daughter by *a fairy*) to be blessed by the local curate with a view to its being used *for* finding treasure Baring Gould, in his "Curious Myths of the Middle Ages," recounts the career of Jacques Aimar, *a* French diviner who could track down criminals So long as the man practised in the provinces, he was almost infallible, when his fame caused him to be brought to Paris, his gifts deserted him There is a parallel to the recent incident at Newark in the use of the divining rod by a volunteer in the search, not long ago, for the son of a well known artist who was drowned in Cornwall The rod was used on the sea in a boat and was understood to offer indications of the cove where the body should be found. In the United States when the country was stirred by the tragedy of the kidnapped Lindbergh baby, all kinds of magic were placed at the disposal of the police The chief of the New Jersey police force let it be known that, if any two seers agreed upon the same clue, the whole of the police resources would be employed in following up the line indicated. No such coincidence came to his notice, but a medium presented himself who claimed special properties for a small instrument consisting of a lead weight on a rotating arm Some incredulous police troopers were sent with him to pursue whatever course the instrument advised After frequent consultations at cross roads the chase led them confidently to a particular house where the baby would be found. It turned out to be the home of residents of unimpeachable respectability In moments of desperate anxiety it is natural to try any device and to pray for a miracle It certainly borders on the miraculous if a water diviner should possess the qualities of a bloodhound

VIENNA

(FROM OUR OWN CORRESPONDENT)

HEALTH INSURANCE

A PROLONGED and stubborn controversy between the medical profession and the krankenkassen—the health insurance societies—has at last ended satisfactorily for both parties Ever since the upheaval in 1934, when the institutions of the social democratic party—of which the krankenkassen formed an important part—were overthrown, practitioners working under the new "social insurance law" have never known how long they could count upon a livelihood from this source Appointments were only temporary and had to be renewed every three or four months, as the economic situation of the krankenkassen was very unsettled and the financial effect of the new organisation had to be watched before any definite agreement could be drafted One of the chief complaints of the profession was that a fifth of the total income of the krankenkassen—which are united in one large union called the Arbeitsgemeinschaft—was devoted to medical fees and the cost of medicines That meant that the more medicines the doctors prescribed the less money was available for their fees In addition they received each month only a part of their bills, and only at the end of the year the balance would be paid after deducting the costs of medicines and naturally the doctors vehemently objected to this arrangement Now, as has just been reported, the representatives agreed that a quarter of the total takings of the krankenkassen will go to cover the expenses of medical fees and medicines All reasonable remedies will be permitted, so that doctors must have a free choice If a medical man is found to have been too extravagant in prescribing, he will have to refund the excess, or to have his fees reduced by that sum, so that he personally will suffer and not, as hitherto the whole profession A governing committee formed by an equal number of medical men and krankenkassen officials, and presided over by a government delegate, will control the economic questions

The problems involved in this matter are rather important because, as the Minister for Social Welfare pointed out in his recent report, the social insurance law affects about 2 000 000 people 30 per cent of the Austrian population and deals with about £17 000 000 a year in contributions towards sickness benefit old age pensions and unemployment provision In 1935 the Krankenkassen spent 20 per cent. of its income in doctors fees, 0·5 per cent in medicines 15 per cent on hospitalisation 28 per cent for sick pay and 14 5 per cent. for administration A total of 331 000 members are insured against sickness to which must be added 230 000 relatives who are also entitled to reduced fees Further statistics show that besides the total of 2 000 000 persons compulsorily insured against sickness there are 416 000 full time workers and 925 000 half time workers insured against accidents while 210 000 are insured against invalidity 743 000 against unemployment and 871 600 in the old age pension.

COMING MEDICAL CONGRESSES IN VIENNA

This year a number of important medical meetings will be held in the capital The centenary of the Gesellschaft der Aerzte in May will be celebrated by a series of social functions and of lectures delivered by the leading scientists of Central Europe In July the International Congress on Short waves will be held here with d Arsonval and Marconi among its honorary presidents Its transactions will comprise three groups Physics (including chemistry and technical physics) Biology and Medicine In September the customary congress of alpine practitioners (the thirteenth) will be held partly in Salzburg partly in Vienna In addition the preparations for the International Surgical Congress which will take place in Vienna in 1938 are now being made including those for a splendid surgical exhibition The committee of this convention is already very busy with the organisation of this meeting which is expected to be the largest of its kind.

PROF HAJEK S SEVENTY FIFTH BIRTHDAY

A short time ago Prof Marcus Hajek, the rhinolaryngologist, celebrated his seventy fifth birthday Although he had asked that no notice should be taken of the event his friends and pupils and the learned societies availed themselves of the opportunity to pay homage to his splendid qualities. In one of the contributions dealing with his life history it was revealed how Hajek brought up in bitter poverty in the country had to work hard for his living from the age of 14 He soon came to Vienna, where he originally intended to study mathematics and natural history But he was advised to turn to medicine if he wanted to earn his living He did so and as a result became a world famous authority on the nose and throat though his whole career had been paved with obstacles and difficulties When he resigned his office as chief of the nose and throat clinic in Vienna after attaining the age limit of 70 years he turned to his old favourite occupation of mathematics and physics and in the recent celebration said to a friend who was congratulating him: That s all very well but if I had been able to study what I wanted to when a boy I would surely have really achieved something and would not have become a mere laryngologist

ACCIDENTS IN VIENNA

In the annual report for 1935 of the Voluntary First Aid Society some interesting items are worth reading Thus we find that 26 134 persons (about 72 a day) applied for first aid of which about 60 per cent had been injured the rest being due to sudden illness Of the total 14 440 were males, 10 060 females and 1616 children There were 3111 traffic accidents that needed attention 1085 being occupational accidents 725 due to athletics or sports 428 to electric shock or to caustic irritants 618 to alcoholic intoxication and 134 persons were bitten by animals. In 2055 instances suicide was attempted or committed. The society s ambulances were called out over 15 000 times or 41 times a day The expenditure was about £16 000 help being rendered to the public free of charge

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

ABERDEEN AND THE TREATMENT OF RHEUMATISM

LAST November Prof Stanley Davidson laid some of the facts about rheumatism before the Aberdeen Business and Professional Club He told them that a sixth of the industrial invalidity of Great Britain is due to rheumatic diseases and the probable cost to the country is about £20,000 000 a year Rheumatic diseases he said might to day be described as Public Health Enemy No I and action against them was urgently required. Among the measures he recommended were the establishment of special centres for treatment compulsory notification the appointment of a medical staff specially trained for the work and the setting up of organisations in every area to arrange that young adults with damaged hearts should find sheltered occupations As Sir George Newman had said in his report to the Minister of Health in 1928 there is a need not only for diagnostic units but for special arthritis units in charge of full time specialists Prof Davidson suggested that the specialist should be a member of the staff of the medical officer of health and be called assistant medical officer for rheumatism the post being similar to that established for tuberculosis Nothing however had yet been done by the Ministry of Health to carry out these recommendations—made in 1928—and he proposed that Aberdeen should take the lead in Scotland in carrying them out A special opportunity was provided by the fact that Aberdeen was on the point of having a large hospital more or less empty and not required for any other than a medical purpose When the patients were removed from Woolmanhill to the new infirmary at Forresterhill ample accommodation would be available and the cost of reconstruction would be low The fall by 50 per cent in the incidence of tuberculosis in the last twenty five years should have released money that might be used to finance the rheumatic campaign with little or no additional expense to the public health service

Prof Davidson s suggestions received support at a meeting of the Aberdeen and district branch of the British Medical Association on Dec 18th when the meeting was addressed by Dr W S C Copeman physician to the British Red Cross Clinic for Rheumatism London Dr Copeman spoke of the economic importance of rheumatism to the country the financial difficulty found by many approved societies in assisting the rheumatic patient and the fact that societies able to make such provision often did not know where to send patients for treatment He emphasised the need for concentrating on industrial areas and outlined the essentials for an effective centre illustrating by lantern slides the equipment and methods used in the British Red Cross Clinic in London The aim was to allow the patients to continue with their daily work as far as possible, one of the most important points in the treatment of patients of the working class

Among subsequent speakers who supported the establishment of a centre in Aberdeen were the chairman (Dr George Mitchell of Insch), Prof David Campbell of the chair of materia medica in the University, and Dr Thomas Fraser It is to be hoped that this excellent proposal will be carried into effect

GLASGOW CORPORATION AND THE VOLUNTARY HOSPITALS

At a meeting of the Glasgow corporation on Jan 7th it was decided that a subcommittee should be appointed to consider the taking over by the corporation of the voluntary hospitals in Glasgow, and their administration as corporation institutions The decision was approved by 50 votes to 39—2 members declining to vote Speaking against the proposal, members of the Progressive party pointed out that the Government are at present considering the report prepared by the Committee on Scottish Health Services so that this local action is redundant and would be a sheer waste of time It was also pointed out that the health committee has already in hand more work than at any time in the past twenty five years Others deprecated the burdening of the rates with expenses which at present were being met by voluntary subscriptions Mr A Whyte (Independent Labour Party), who submitted the motion, said he hoped the subcommittee would decide that the corporation should control the hospital services in the city and that the Government should accept the financial responsibility Criticising methods at present adopted to raise money for hospitals he asked, "Why should people have to beg for money to bring relief to those who suffer?" and described waiting lists as a crime Mr T A O'Hara (Socialist), convener of the health committee, said there were agreed as to the valuable work done by the voluntary hospitals in the past, but he thought it desirable that a hospital system should be developed which would get rid of the long waiting lists Their inquiry would not prejudice any action which the Government might take, and they might be able to get information that would be of value to the Government

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THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Capts H B Parker, D S C to *President*, for Medical Dept, Admiralty, K H Hole, O B E, and C F O Sankey, O B E, to *President*, for course, G R McCowen, O B E, to *Drake* for R N B, J C Clouston to *Osprey*, for course, and C L Robertson to *President*, for staff course

Surg Lt Comdr C Keating to be Surg Comdr

Surg Lt Comdr T W Froggatt to *Pembroke*, for R N B

Surg Lts D D Steele Perkins, D B Jack, and G H C R Critien to *Queen Elizabeth* C J P Pearson to *Drake*, for R N B, F W Baskerville and C J Roberts to *Pembroke*, for R N B, I C Macdonald to *Drake*, for R N B N M McArthur to *Sandwich* T A Turnbull to *Moth*, I McN A Drysdale to *Folkestone*, J L S Steele Perkins to *Tamar*, addl, and F H Lamb to *Tarantula*

Mr J Adam of Kentish Town has been appointed Admiralty Surgeon and Agent for the London District No 16

ARMY MEDICAL SERVICES

The War Office announces that Prof G Hadfield, F R C P, Department of Pathology, St Bartholomew's Hospital, has been appointed Honorary Consultant in Pathology to the Queen Alexandra Military Hospital, Millbank, S W 1, in succession to the late Prof L J Kettle

Maj G T Garraway, R A M C, has been appointed Dep Asst Dir Gen, Army Med Servs, War Office

ROYAL ARMY MEDICAL CORPS

Lt Col A H T Davis, having attained the age for retirement is placed on ret pay

Maj and Bt Lt Col D C Monro to be Lt Col

ARMY DENTAL CORPS

Short Service Commissions F G B Waddell to be Lt (on prob)

TERRITORIAL ARMY

Lt Col W F Mackenzie T D, resigns his commn and retains his rank with permission to wear the prescribed uniform

Maj A MacG Duff, M C, R A M C, T A, to comd the Med Unit of the Edin Univ Contgt, Sen Div, O T C

Capt W R Everatt from T A Res of Off (5th Bn W Yorks R) to be Capt

Lt O T Wade to be Capt

Lt R Ropner, late 5th Bn Durham L I, to be Lt

J C Fletcher (late Offr Cadet, Edin Univ Contgt (Med Unit), Sen Div, O T C) to be Lt

G H James (late Cadet, St John's Sch Contgt, Jun Div, O T C) to be Lt

N M Stephen to be Lt

Supernumerary for service with O T C A. W D Leishman (late Cadet Serjt, Westminster Sch Contgt Jun Div, O T C) to be Lt

ROYAL AIR FORCE

Squadron Leader P H Perkins to R A F Station, Ismailia, Egypt

Flight Lts L S Everett to Headquarters, R.A.F Middle East, Cairo Egypt, and F H Peterson to No 4 Flying Training School Abu Sueir, Egypt

The undermentioned Flight Lts are granted permanent commissions in that rank H Bannerman and I Mackay

Flight Lt H S Barber is transferred to the Reserve Class D

Flight Lt M T O Reilly resigns his permanent commission

Flying Offr R M Outfin to No 1 Armament Training Camp, Catfoss

INDIAN MEDICAL SERVICE

Capt W Scott to be Maj

Lt Col J J Harper Nelson, C I E, O B E, M C, retires

Indian Medical Department—Asst Surg (1st Cl G H Blaker to be Lt (Sen Asst Surg)

COLONIAL MEDICAL SERVICE

Dr J H Bartlett has been appointed Medical Officer Kenya, Dr G V Harry Dr T B Sinclair, and Dr I S Parboosinghe, Medical Officers, Jamaica Dr W C G Murray Medical Officer, St Lucia, Mr R Maclachlan, Dental Officer, Malaya Mr W H R S Dental Surgeon Falkland Islands, Mr P H Tatc Dental Surgeon, Tanganyika Dr J C R Buch becomes Senior Medical Officer, Somaliland, Dr V F

Critien and Dr G F T Saunders, Senior Medical Officers, Gold Coast; Dr R Nixon, Assistant Director of Medical Services, Tanganyika Dr W A Young Senior Medical Officer Tanganyika and Dr H D Tonking Senior Pathologist Mauritius.

DEATHS IN THE SERVICES

Lt-Col. W Keats R.A.M C (retd) who died on Jan 14th at Keynsham Somerset qualified L.R C.P I (1874) M.R C P.I (1879) and F R C.S.I. (1886) He became an army surgeon in 1878 surgeon major in 1890 and Lt-Col R.A.M C in 1898 retiring in June 1904 He served with the military expeditions to Cyprus in 1878 and Egypt in 1882, for which he received a medal and bronze star; in 1885 he was with the Sudan expedition and was present at the battle of Suakin Later he was responsible for the health and medical treatment of troops in several parts of India and on his retirement he was placed in medical charge of the troops in the Weymouth Command (1909–12) During the European war he was re-employed at Bristol on recruiting and pensions boards Two of his sons are serving as officers in the Army

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GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month his name can be seen later in the half yearly index

FROM A PUBLIC HEALTH CLINICIAN

IV

At the vast cosmopolitan caravanserai which sometimes receives me upon my visits to London I sit at the bachelor's table and that brings to my mind the wisdom of June Not the glorious month of which poets write and indeed June is not her name She is just the pleasant, brisk bright little lady that brings my breakfast and I named her June because her predecessor was called May Between courses and mouthfuls, and when the superintendent is not looking we converse and although her vocabulary is more limited than that of Dr Johnson her small head is stuffed as full of wisdom as her large heart is with kindness She has her own views of the guests which have alarmingly little relation to their exalted or humble stations Some of us are repulsive others charming but she classes us all as more or very much less degrees of nice. Lowest grade of all come the really not at all nice next come the not nice, and next the not very nice. More favoured customers may be nice' very nice or at the top of the tree really very nice indeed

A well to do retired bachelor doctor regales us with stories of travels he has made or of travel feasts that he is preparing June comments all very well for him to make us jealous about the good times he has had or means to have *he's only got himself to think about* And on reflection this applies to a number of those who appear fortunate.

An economic crisis and a prosperous business man loses his brisk manner and becomes reserved. Dark rims line his eyes and he eats less breakfast One day he discusses suicide he sympathises with the victims, and says how near he has been himself to that catastrophe It gives June food for thought Oh, these prosperous business men no one hears anything about it when they are piling up money but when anything goes wrong they talk of suicide At this point she whisks away my porridge plate and disappears into the blue soon to return with bacon and eggs and to continue but there I suppose we are the lucky people nowadays we just draw our money at the end of the week and no need to worry about anything

A retired colonel from India tells us wonderful stories about Indian magicians Says June I think he must believe all he's told then later most people believe three quarters of what they are told and not more than a quarter is really true" And the colonel thought we were impressed!

The Lindbergh baby was the topic one breakfast time and June remarked as she brought the fish our police would have found him in a few days these Americans have a lot to say but they're better on paper than in reality With the bacon and kidneys she continued number 252 said last week that America expects that every other nation will do its duty As usual she became mollified as the meal was ending. I wish someone would pay my fare to America I expect they are just as nice as we are when you get to know them. Indeed so do I hope someone will take June to America—not that we want to lose her She will return wiser than ever

It was election time and we were all wondering how to suppress a very opinionated and loquacious diner from the north In an unguarded moment he asked June which way she voted ' I always vote labour said she and vanished. Our friend's jaw dropped and he became silent to us refreshingly silent When he had gone June was confidential Of course I never have voted labour said she they don't know enough about affairs and such like but I thought it might quiet him And it did

Wisdom from divines from hard headed business men and from Members of Parliament is expected but not always forthcoming Give me the wisdom of June.

* * *

The slump is passing and now let us hope the famine in Harley-street will also pass The position is critical there are more plates than ever in the select London spots, and yet a great deal of consulting work has passed to the provinces The London consultant deserves sympathy the small minority are very prosperous some are the reverse and the majority have a hard time with fabulous rents to pay and constant teaching work with free consultations at hospital allows little time for earning It is very unfair but the effects of the famine are far reaching The elaboration and prolongation of diagnosis and the complexities of treatment are not solely the result of scientific progress Students are taught these methods and it is not always to the advantage of the community Questioning an old friend who had achieved a considerable reputation in Harley-street as to his prosperity he replied Oh I am not yet wealthy but thank goodness I can now afford to be honest As far as the speaker was concerned the remark had no substratum of truth let us hope it would not often be strictly accurate; the majority of doctors are ever ready to confess their faults and to join in any merriment at their own expense, but the amusing cynicism may create an unfortunate impression when displayed among the laity

* * *

We hear classical music from ancient and modern composers on the air and at the Queen's Hall, jazz rhythm at untold restaurants and dance saloons, as well as from the B B C The merits of different music are difficult for my generation to assess Souza's band appealed to me, and, when jazz first was played I liked the liveliness of the tunes, which reminded me of the national anthem of Zanzibar Now for so many years we have heard so much jazz that it creates within me unpleasant emotions, whereas classical music arouses more pleasurable emotions, and seems to stimulate thought At different ages the effect may vary, for young people assure me that the rhythm of jazz is delightful and suggests the pleasures of dancing, to me dancing is a minor erotic pastime, to be indulged in only as convention demands, and jazz, therefore, has no appeal It certainly seems that a taste for what is called good music is more often acquired than inborn Perhaps coming years will provide us with a new type of music, or new tunes, or in another 20 years my opinion about such topics will have changed Any individual with a progressive mind may be expected to change his views at least every 10 years

* * *

After discussing music it may be fitting to turn our minds to art A vast subject indeed, and one which appeals to doctors, some of them are artists of merit, while many sketch in a dilettante way At the Herkomer school in my student days I met many artists and found them original and cheery folk, sometimes moody, always intelligent, and with a fondness for the pleasures of life One of them I chaperoned and assisted to secure suitable subjects at the London Hospital for a composite full page drawing in an illustrated paper, which would indirectly assist our quinquennial appeal In the same artist's studio were numerous pictures in colour or black and white, one of which represented an accident to boats during Cambridge May week The artist told me he had been congratulated on the number of lifelike portraits of Cambridge celebrities, "and yet," he said, "they are all drawn from two models" He showed me the similarity of the faces, and with the clues thus provided I have noticed that the same method is generally used by artists, sometimes the model posing as a man, sometimes as a woman. No doubt this fact is already known to most readers but it was new to me

Modern trends in art are, to the simple layman, bewildering It was interesting to be taken round the Royal Academy by an artist and made to realise the value of broad and distant impressions in landscape painting and to be informed that the heavy square, naked forms depicted in some studies showed strength rather than ugliness, which had been my unfettered opinion In spite of all information I still regard those forms as ugly, though ready to believe that strength was what the artist intended to convey, therein lies the insuperable difficulty of most modern artistic trends including abstract art and surrealism. The writer of a letter, review, or journalistic paragraph may fail to convey his exact meaning to the reader although the whole English vocabulary is at his command, the painter of a picture is in a truly impossible position when seeking to convey ideas or conceptions through the vision of various forms or appearances painted on canvas It seems certain to me that the majority of intelligent observers would form widely different conceptions of what is intended. Should we, therefore, taboo these modern strivings to represent on canvas thought or emotions, conscious or subconscious ? Certainly not This new art is an advance which may fail to day and yet have a great future when the artists' powers of expression and the world's knowledge of psychology have both advanced.

CORRESPONDENCE

URETHRAL RUPTURE WITHOUT EXTRAVASATION

To the Editor of THE LANCET

SIR,—It is not perhaps generally recognised that intrapelvic laceration of the urethra may give rise to retention and not extravasation of urine We have recently had experience of two cases in one of which there was retention without extravasation for as long as 29 hours after the urethral injury, while in the other retention was present for 12½ hours It is important to recognise this protective power of the sphincter to hold up urine within the bladder and prevent its extravasation because the surgeon who is unfamiliar with the fact may be tempted into a hurried operation on a badly shocked patient in the belief that he is thereby guarding his patient from imminent extravasation The patient with this type of urethral rupture is typically a youth who has been run over and sustained a fracture of the pubic arch with complete laceration of the urethra and severance of the puboprostatic ligaments At operation the bladder in both of our cases was the size of a coconut It should be mentioned that the delay of nearly 30 hours was not deliberate on our part for this period elapsed between the time of the accident and the boy's admission to hospital. We are impressed with this further example of a natural protective mechanism Both cases have done well after operative treatment

We are, Sir, yours faithfully,

LAMBERT ROGERS,
A L D'ABREU

Surgical Unit Royal Infirmary Cardiff Jan 13th

HOSPITAL AMALGAMATION IN LIVERPOOL

To the Editor of THE LANCET

SIR,—In reply to Mr Bedwell's letter in your issue of Jan 2nd (p 51) the Liverpool United Hospital Bill was deposited at the Private Bill office on Nov 27th, 1936, and Mr Bedwell's quotations from the Bill are taken from the text as printed on that date Subsequent to deposit, however, certain amendments in the text have been made by the promoters of the Bill, and I should be grateful if you would allow me to make certain corrections in those portions of the text which have been quoted They are

(a) "No rule regulation or recommendation of the medical board" now reads "No resolution of the medical board"

(b) "The medical board shall have the supervision of the medical and surgical work of the Hospital and all matters relating to the purchase of surgical instruments and apparatus shall be referred to the medical board that board shall not have power to purchase any instruments or apparatus without the previous sanction of the general committee now reads The medical board shall have the supervision of the medical and surgical work of the Hospital save that all matters relating to the purchase of surgical instruments and apparatus shall be dealt with by the general committee "

(c) The governing body of the Liverpool United Hospital according to the amended Bill will consist of fifty three and not fifty-one members the representation of the Merseyside Hospitals Council having been raised from two to four persons

In addition, Mr Bedwell draws attention to three specific problems The first concerns a provision permitting of the allocation of a percentage of the receipts from the Merseyside Hospitals Council to staff fund ed The amendment suggested to meet this point authorises members of the honorary medical and surgical staffs of the hospital to receive payments under any special arrangements in respect of services provided or rendered by the Hospital to patients students or probationers or to institutions local authorities or other bodies

Secondly [illegible] Mr Bedwell refers to the omission of a reference to the constitution of the Associated Voluntary Hospitals Board. This body which represents the nine teaching hospitals in Liverpool has been empowered by them to make recommendations concerning candidates for posts on the honorary staffs of all Liverpool teaching hospitals and it is hoped that thereby the work of these hospitals may be coordinated to a degree impossible under the system whereby appointments in the past have been made by each individual hospital without relation to other hospitals associated with the same medical school. In [illegible] the opinion of Parliamentary Counsel a close definition of the constitution of the Associated Voluntary Hospitals Board is unnecessary in the United Hospitals Bill.

Thirdly [illegible] Bedwell states that there is no provision [illegible] the representation on the medical board of [illegible]alists other than physicians and surgeons (t[illegible]r with dental surgeons, pathologists and anaes[illegible]ts for whom specific provision is made) This is n[illegible] case In the first instance the medical board of [illegible] United Hospital is to consist by definition [illegible] the holders of all posts set forth in Part I of the annexe to the Bill and the posts there set forth in[illegible]de the obstetricians, gynaecologists radiologists [illegible] other specialists to whom Mr Bedwell refers. All persons subsequently appointed to fill vacancies which occur in the list of posts set forth in Part I of the annexe and all persons appointed to [illegible] all additional offices of a character similar to those held by the persons whose names are set out in Part One of the Annexe will become members of the medical board

I am Sir yours faithfully

A. V J HINDS

Secretary Associated Voluntary Hospitals Board.

Water-street Liverpool Jan. 13th

RADIOGRAM AND RADIOGRAPH

To the Editor of THE LANCET

SIR,—In reading through the supplement to your issue of Jan. [illegible] I note that you state your preference for the word radiogram Personally I have always used during the last 20 years the term *radiograph* in all my writings—a procedure which is in accord with the Shorter Oxford English Dictionary (p 1640) I agree with your [illegible] for uniformity and I am willing to comply; but I should be glad to know why you use the term radiogram which is commonly used for wireless messages and for radiogramophones Surely a photograph and the process used in obtaining such, is so similar that it would seem more reasonable to associate the accepted terms photograph to photograph, photographic and photographer with radiograph to radiograph radiographic and radiographer —I am, Sir yours faithfully

JAMES F BRAILSFORD

Edgbaston Birmingham Jan 5th

To the Editor of THE LANCET

SIR,—In your supplement On Writing for THE LANCET there is one thing and one thing only with which I disagree and that is the use of the words "radiogram and radiograph Whether we like it or not these terms are now wedded for ever to apparatus for the combined reception of broadcasting and the production of gramophone records as well as being also used for telegrams transmitted by wireless I think an effort should be made in medical journals to popularise the use of a skiagram" and if you do not like the verb to X ray why should we not say that the patient was examined by X rays?—I am Sir yours faithfully

London W., Jan. 8th　A MEDICAL JOURNALIST

*** Our preference for *radiogram* is based on the analogy of *telegraph* and *telegram* *Telegraph* dates from the eighteenth century but it was not until the 1850 s that the need was felt for something simpler than *telegraphic message* and *telegram* was devised to signify what was written by the telegraph The Oxford Dictionary points out that the great bulk of the words ending in *-graph* is composed of technical terms of very recent invention mostly expressing the general sense of that which writes portrays or records In medicine as elsewhere *there are various examples of -graph in the agent* sense which have been complemented by *gram* in the passive or resultant sense (e g *electrocardiograph electrocardiogram*). *Photograph* which Dr Brailsford quotes as precedent is really an unlucky exception to a convenient rule: *the public for some reason* never took to *photogram*—perhaps because there was no chance of confusing *photograph* with *camera* The earliest reference we can find to *radiogram* is in April 1896 and not long afterwards alas we were queering our own pitch by using *radiograph* for the picture rather than the machine that makes it *Radiogram* as meaning a wireless telegram was current in 1905 and at that time the wireless experts also claimed *radiography* as their own The medical profession seems to have regained *radiography* and it might still regain *radiogram* As "A Medical Journalist" *says there is nothing* much against *skiagram* except that *skiascopy* (which would be the equivalent of *radioscopy*) already means the determination of the refracting action of the eye We mentioned the skiagram of a sireniform monster in April 1896 and are *prepared if need be* to do so again But if the medical profession in this country is really to retire in disorder before the advancing host of gramophone cum radio manufacturers would it not be best to join forces with our American colleagues and take our stand on *roentgenograph* and *roentgenogram*—words whose *possession no one is likely to dispute?*—ED L.

NASAL SINUSITIS IN CHILDHOOD

To the Editor of THE LANCET

SIR,—I have read with interest Mr Asherson's letter in your *last issue* He says that a difficult problem arises in considering the treatment of the chronic cases—and many become so in spite of all types of treatment" It is to be regretted that no mention is made of one of the most useful forms of treatment in such cases—i e , radiotherapy By this I mean treatment with short (wireless) waves and infra red rays, the application of ultra violet rays by means of quartz applicators attached to the Kromayer mercury vapour lamp to the nostrils and the postnasal space, and general ultra violet irradiation to increase the patient's general resisting powers I have described elsewhere (Therapeutic Uses of Infra red Rays, 3rd ed) the technique and rationale of this treatment

The majority of such children suffer from hypovitaminosis , therefore general ultra violet irradiation of itself must be particularly beneficial to them Suffice it to say that many of us have treated a great number of such cases, and the results are rarely disappointing Almost all the patients are relieved if not cured The fact that this form of treatment causes no pain or discomfort from its inception must make it a pleasing alternative to the methods suggested by Mr Asherson —I am, Sir, yours faithfully,

W ANNANDALE TROUP

Wimpole street W Jan 18th

INFORMATION SERVICE FOR RESEARCH WORKERS IN HUMAN GENETICS

To the Editor of THE LANCET

SIR,—My executive committee invites your coöperation in making known the service here announced One activity contemplated in setting up the Clearing House for Human Heredity is the organisation of information service for research workers in the subject The value of such a plan has been demonstrated in the information service already established for workers on drosophila, &c It should be noted that apart from convenience of ascertaining easily centres at which comparable work is going on, the circulation of notice of their work by those engaged in a particular inquiry is a safeguard in dating priority—a point to which it is natural to attach some importance

Workers are requested to address to the Bureau a short paragraph describing the work on which they are engaged. These notices will be multiplied and circulated to all those coöperating In the first instance this bulletin will be issued every twelve months Later supplementary bulletins will be issued more frequently Those using this service are asked to subscribe 5s , a sum equalling approximately one quarter of a pound sterling equivalent in the currency of their country The accepted languages are French, German, English —I am, Sir, yours faithfully,

R RUGGLES GATES
Chairman Bureau of Human Heredity

115, Gower street London, W C 1, Jan. 14th

TUBERCULOUS DISEASE OF THE ABDOMINAL LYMPHATIC GLANDS

To the Editor of THE LANCET

SIR,—May I state my views on this subject from the point of view of a medical superintendent of an institution for non pulmonary tuberculosis ? Almost all the cases that are admitted do extremely well on the usual form of treatment for all kinds of tuberculosis—viz , fresh air, nourishing food, and rest In addition they receive artificial light (carbon arc), the old fashioned ung hydrarg rubbed into the abdomen, fresh tomato juice (one ounce three times a day), and careful regulation of the bowels with liquid paraffin when necessary I am convinced, however that the fresh air, good food, and rest are the main essentials of the treatment The response to treatment is much more rapid than in other forms of non pulmonary tuberculosis Among the which do badly are those which have ha intervention before admission They often indolent operation wound discharging pus very resistant to treatment, while others distressing condition—fæcal fistula We a the type of case that is admitted to a gener with acute symptoms simulating other conditions, and in which the diagnosis is until the operation is performed With th of this type of case I am of the opini place for patients suffering from tub minal lymphatic glands is an open air h that the treatment should be on conser

I most heartily agree with Mr Colt (THE LANCET, Jan 16th, p 125) in th clusion that "Tuberculosis of the tends in the main to natural cure," but statement earlier in the paper that " that when a pre operative diagnosis of has been made the safest treatment My view is that when a pre operative tuberculous mesenteric glands has safest treatment is non surgical in the of cases —I am, Sir, yours faithfully,

E H
Medical

Wrightington Hospital Appley Bridge,
near Wigan Jan 19th

DR RENALD FERNAL

We have received the following qu lady named Fernald who is seekin concerning an ancestor

"I am trying to locate my ancest Fernald (Fernall, Fernell, Furnell, possibly, Fernefold or Fernewold), America about 1630 or 31 as 'chiru Piscatagua Colony (Mason's Plantatio mouth, New Hampshire, but for a Maine He was a leader in town aff of the first to sign a grant of Glebe in 1640, and a petition to Boston G 1653 to change the name of the tow berry Bank, to Portsmouth' He clerk and recorder, commissioner, su as 'chirurgeon' He thus was app educated man, but we do not know English home of the family I have him through his profession, but success There is a tradition that Chester or from near Chester and from the English Navy to go to A been through a number of the Harle lished ones) in the British Museum r in the Navy at that time but no A coat of arms of the Fernefold was accepted by some members of or five generations ago as being the family, but I do not believe it ha with us Dr Renald's will, referre his children, has never been found preserved at Concord, New Hampsh Johanna Fernall' Dr Renald pro 'd' because it went well with his f been told that there are records (o and/or first half of the sixteenth that each 'doctor' or 'chirurgeon' had a certificate showing that he chirurgeon's instruments and tha to enter the profession. How t what extent was it enforced, if tr know ? And were there lists kept certificates were issued ? As f Fernald was concerned we only Johanna willed to her son Joh books and instruments that we his chest'"

OBITUARY

VILLIAM HUNTER C.B M.D Edin F.R C.P Lond F.R S E

Villiam Hunter who died of cerebral thrombosis ondon nursing home on Jan 13th was born lantrae on the Ayrshire coast in 1801 the the late Robert Hunter He received his education at Edinburgh University where a brilliant student and was awarded the cholarship and later the first Lucas Walker studentship at Cambridge Abroad he for a time in Leipzig Vienna and Strasbourg demic honours included an M D (gold medal) recently as 1927 the Hon LL D Edin He London in the early nineties and was at iched to the West London and the London ospitals In 1803 he joined the Charing

DR HUNTER

[illegible]

Hospital medical school and in 1003 became physician to the hospital. In 1800 he was R C P Lond and afterwards was an or the diploma of the college and for the al subjects at Cambridge and Glasgow

is long life in London Hunter s medical ere centred in Charing Cross and the ver hospitals of which he eventually ior physician and he was elected a vice Charing Cross He was dean of the ol from 1011 to 1015 and built up the of pathology and bacteriology which present Institute of Pathology It laboratories that he pursued his gun at Cambridge on focal sepsis and the severe anaemias. His interest in and school was deep and continuous ular attendant at council and committee ed a prominent part in stabilising the tion of both hospital and school at a and was largely instrumental in recon enlarging the school part of the cost himself defrayed His interests were however to the laboratory and wards torical and antiquarian leanings which n his writing an appreciative and intriguing book entitled an Historical Account of Charing Cross Hospital and Medical School.

In 1015 during the Great War Hunter went to Serbia with the rank of colonel in charge of the British Sanitary Mission to assist the Serbian authorities in controlling a serious epidemic of typhus an onerous task which he carried out with all his energy and resourcefulness in the face of extreme difficulties The main problem at issue was the eradication of lice which were carriers of the fever and he was responsible for the idea of the destruction of these and other vermin by what became known as the Serbian barrel and the delousing train For his services in Serbia he was awarded the decoration of grand officer of the Order of St Sava After Serbia from 1015 to 1017 he acted as president of the committee for the control of infectious diseases in the Eastern theatres of the war and in this he was associated among others with his old friend the late Sir Andrew Balfour By his personal charm and tact as chairman of that committee he created an atmosphere of harmony which was felt by those who came in contact with this peripatetic group of distinguished scientists But his strenuous labours in the East undermined his health, and after the war he seemed to have lost some of that intense enthusiasm which characterised his early days For his war services he was awarded the C B

Hunter s principal contribution to medicine was his work on the severe anaemias and oral sepsis a comprehensive term which he introduced into the literature He separated pernicious anaemia as an entity from the secondary anaemias and insisted on the importance of oral sepsis in its aetiology and although recent advances in haematology have modified this view by his pioneer researches he threw much light on the clinical and gross pathological aspects of that disease

As a teacher he was in no way stereotyped but was an inspiration to his students to think and observe for themselves and succeeded in infecting them with his own enthusiasm As a man Hunter was a lovable character beloved alike by his colleagues and students Many a time in committee his flair for saying the kind thing bridged over difficulties and frictions where reasoned argument had failed Those who had the privilege of his friendship will always treasure the memory of a very perfit gentil knight The deepest sympathy of all who knew him will go out to his widow

The funeral service took place at St Columbus Church of Scotland and he was buried in the cemetery at East Sheen

J M H M

Prof Ledingham writes: As one who recalls with pleasure an intimate companionship with the late Dr William Hunter during a period in his career when his varied talents were placed at the country s service, may I be allowed a brief note of appreciation? It has been said that the war turned William Hunter the consulting physician into an administrator and expert in practical hygiene and I can readily believe the truth of this In pre war days I knew him as an authority on pernicious anaemia on the symptomatology and natural history of which he had written widely and as an unwearied protagonist of the view that some specific toxin derived in all probability from the product of oral or intestinal sepsis was responsible for the hæmolytic phenomena to which he attached a primary and cardinal importance Hunter was well qualified to propound these views, as during his pathological career he had made an important experimental contribution to our knowledge of blood destruction and its relationship to jaundice by his work on toluylenediamin Even now, though we have learnt to cure or rather to keep in abeyance the condition that Hunter made his life study, its precise pathogenesis still eludes us

"When I joined Hunter and his little band of sanitary advisors in Cairo at the close of 1915, Hunter was already a seasoned traveller in war zones In February, 1915 he had led the British sanitary mission to Serbia, and there he had been busily engaged in the control of typhus till June of that year when he became chairman of the medical advisory committee dispatched by the War Office to the Eastern Mediterranean This was a new Hunter I found who carried his 55 years easily Travel and new interests had served but to accentuate his sprightly and debonair figure Pernicious anæmia was by no means forgotten, but now the Serbian barrel and the travelling railway van disinfector held the field. The former, a device of Lt Col. Stammers had served well in Serbia, and now when Egypt was rapidly filling up with imperial troops in the early months of 1916, the provision of similar measures became an urgent necessity Hunter with his Serbian experience behind him was in his element Well do I remember, at a wayside station in the desert, the first try out of a railway van steam disinfector, packed with tightly rolled kits, and an assortment of bacterial cultures and other test objects embedded in the mass It was clear to most of the audience when the contents of the van were turned out that the pressure steam had done its work well, and at the finish as Hunter stood proud and happy adjusting a Laurens cigarette to his holder, a zealous but rather incredulous medical officer went up to him and in all seriousness asked 'Will it kill a weevil, Sir?' 'A weevil?' said Hunter completely nonplussed but ready to bluff it out, 'A weevil? Has anybody got a weevil?' No one obliged, the crisis passed, and Hunter turned to me and whispered 'Most amazing! What is a weevil anyway?'

"Hunter's genial and kindly address did much to make things easier for the slacker faced with the omniscient Andrew Balfour full of the latest sanitary wrinkles and eager to impart them, and with the precise and inquiring George Buchanan rapidly filling his notebook with incriminating data shortly to be turned into formal reports for the information of the Higher Command Unfortunately Hunter was unable to accompany the rest of us (Balfour, Buchanan, Wenyon, and myself) to Mesopotamia, but on our return to Egypt in 1917 we found him at his post and had the benefit of his counsel in the concluding stages of the committee's work To me Hunter was the physician who had just missed developing into the experimental pathologist His early inclinations, fostered as they were by the scholarships he held and the post graduate studies he had made in Germany and elsewhere, were, he often told me, towards the laboratory life Taken on the occasion of the International Congress of Hygiene held in London in 1891, he appears in a treasured photograph of the officers of the Bacteriological Section over which Sir Joseph Lister presided, this includes its three honorary secretaries, Ruffer Hunter and Sherrington, who also later left the bacteriological fold The great war recalled to Hunter these primal urges, and he rose manfully to the occasion. In post war days our active paths have crossed but once in connexion with the work of the People's League of Health, in whose inquiries and report (1932) on bovine tuberculosis and the milk question he took an active part Ave et vale"

JOHN ALEXANDER MacWILLIAM, M D, LL D Aberd , F R S

THE news of the death on Jan. 13th of Prof. J A MacWilliam, for 41 years occupant of the chair of physiology in Aberdeen University, has been recorded with deep regret He died in an Edinburgh nursing home in his 80th year, having retired from his professorial appointment in 1927 He was a distinguished student of Aberdeen University, where he graduated M B, C M in 1880, and M.D highest honours in 1882 From 1882 to 1886 he was demonstrator of physiology at University College, London. In 1886 he was appointed professor of physiology in Aberdeen University in succession to Prof Stirling, and during the long period while he filled this chair the physiology department in the University was reorganised and considerably extended Prof MacWilliam will be remembered, not only for his lucid teaching and important research work, but also for his personal qualities His powers as a teacher and his example and influence as a man were much appreciated by his students and by the University for which he worked. He received the honorary degree of LL D Aberd. in 1928 and was elected F R S in 1916 His investigations on the physiology of the heart and circulation are well known and were so advanced that it was not until many years after their publication that their full significance was adequately realised. As far back as 1887 he maintained that sudden death during the administration of chloroform is due to ventricular fibrillation

PROF MACWILLIAM

[Photograph by MacNab

We owe to Prof E W H Cruickshank the following tribute "By the death of Prof J A MacWilliam, the University of Aberdeen and the medical sciences have lost a man who by devoted service to his Alma Mater and untiring zeal in scientific investigation had become known to many at home and abroad As a teacher Prof MacWilliam was noted for the clear and lucid manner in which he could present, with but the slightest reference to notes, the most difficult aspects of his subject As a lecturer he had few equals, every lecture was a finished product, excellently arranged, clearly delivered, full of interest and incident Few there were who attended his course in systematic physiology who did not realise that a memorising of facts was of little importance and that clear reasoning a hysiological problems must play a great part in he training of the mind for the practice of medicine 'o know him as professor was to admire but to now him as friend was to discover new and richer epths of character In the quiet of the study one as introduced to a great personality The experience f the years and they were not without their share f sorrow and suffering had produced a wonderful ombination of philosophic insight and critical cientific judgment By his personal qualities lways gracious, never unkindly critical ever sympathetic Prof MacWilliam endeared himself to many enerations of Aberdeen students His charm of nanner his constant kindness and courtesy won for im the affectionate regard of all who knew him ntimately In the world of science his name has n enduring place in many and diverse circles his nemory will long be cherished

ARTHUR HUGH THOMPSON, M D Camb

Dr Hugh Thompson whose death at his home in Iampstead was announced last week was the oungest of eight children of Charles Thompson of reswylfa, Cardiff where he was born in 1860 He as sent to Quaker schools at Weston super Mare nd Grove House Tottenham and then as Whewell cholar entered Trinity College Cambridge where he ook the historical tripos in 1883 He remained for time in Cambridge as a coach giving extension ectures on history in the northern counties and then went to Toynbee Hall as one of the earliest residents under Canon Barnett. The discovery of his interest in medicine led him back to Cambridge and then to the London Hospital from which he qualified in 1801 at the age of 32 years He was receiving room officer and clinical assistant at the hospital, and after a short period of general practice decided to specialise in ophthalmic surgery

DR. HUGH THOMPSON

[Photograph by [illegible]

Starting at Moorfield as clinical assistant, in 1808 he was appointed assistant surgeon to the Western Ophthalmic Hospital becoming surgeon in 1901 and a member of the board of management in 1003 he remained associated with this hospital through the lean years and was largely instrumental in its resuscitation on modern lines His training and equipment fitted him for critical observation rather than surgical technique he wa an excellent ophthalmoscopic observer and more an ophthalmic physician than surgeon In the care of out patients he spared no time or troubl and he was as iduous in following them up hi major literary output being reports of clinical work of this nature. He also held appointments at the Blind School Swiss Cottage and the Royal Sailors Orphan Girls School Fitzjohn s-avenue During the war he was oculist to the Brook War Hospital Early in his career he became joint editor of the *Ophthalmic Review* and for ten years he contributed reviews of ophthalmological literature to the Medical Annual. Of this part of his work it is possible to speak with some knowledge and assurance for he was a contributor to these columns over a period of twenty years and was in fact engaged on a review for THE LANCET on the morning of his death His knowledge of languages his broad outlook on men and manners, his keen interest in every detail of normal or pathological anatomy and his command of simple natural expression made him an ideal contributor About three years ago he had a cerebral hæmorrhage—fortunately on the right side for he did not lose his power of speech and remained mentally alert through several relapses

Dr Thompson married in 1801 Ann Josephine eldest daughter of Columbus Clothier of Street Somerset They had no children of their own He travelled a good deal abroad and was one of the most pleasant holiday companions He was a keen Liberal and supporter of the League of Nations

WILLIAM JENKINS OLIVER, B.M Oxon , M R C P Lond

WE regret to announce the death on Jan 11th in a Newcastle nursing home of Dr William Jenkins Oliver the elder son of Sir Thomas Oliver the well known Newcastle physician The death occurred suddenly from cardiac thrombosis as a sequel to a serious operation from which the patient appeared to be making a good recovery

William Oliver was born in 1880 and was educated at Winchester and Oriel College Oxford He proceeded for his medical studies to the London Hospital and graduated in 1011 as B.M Oxon later taking the diploma of M.R C.P Lond He early decided to specialise in dermatology and was for a time chief assistant in the skin department of the London Hospital under Dr J H Sequeira On the outbreak of war with a commission as captain R A M C he served as skin specialist at the base hospital at Rouen and he remained for a period at Cologne with the Army of Occupation acting as a skin specialist He was popular with both officers and men in the Army for he knew his work thoroughly well and was always sympathetic with his patients and especially with the children On his return to England he held the post of dermatologist at the Victoria Park and the Evelina hospitals for children and acted in a similar capacity at the Prince of Wales General Hospital Tottenham He was never a very strong man—during the war he had undergone an operation for appendicitis at Rouen—and eventually he gave up a good deal of the dermatological practice which he had acquired in London and decided to spend a considerable amount of time on a farm in Norway and Denmark being an accomplished Scandinavian scholar and also a great fisherman He also studied in Oslo and in the Finsen Hospital at Copenhagen. In research work there he made many friends, chief among which was the veteran dermatologist Prof C Rasch He used his knowledge of Norwegian and Danish to translate several Scandinavian books into English which met with a favourable reception in many journals and in these columns Further during his residence at Flekke on the Sunnfjord he every year acted a locum tenens to the local doctor, enabling that practitioner to have a holiday In that pleasant region distances are great and means of communication scanty, and Dr Oliver came to know the conditions of life on the fjords as well as if he had been a farmer or a fisherman himself Many of his patients there will feel the loss of a friend.

MARGARET THACKRAH, M D , M R C P Lond

Margaret Grace Thackrah, who died in London on Jan 10th at the age of 56, was educated at the North London Collegiate School and University College, London, where she took her B.A degree In 1903 she entered the London School of Medicine for Women, qualifying M B , B S Lond in 1909 After holding appointments of house surgeon to the Royal Free Hospital and medical officer to Maltings Farm Sanatorium, she was for a time resident at the C E Z M F Hospital in Quetta In 1914 she obtained the M D Lond in medicine and during the war she was one of the civilian physicians attached to the Military Hospital, Endell street, and medical officer to a T N T filling factory In 1915 she was appointed assistant physician to the South London Hospital for Women, and from 1926 to her death she was senior physician to this hospital After the war Dr Thackrah became specially interested in the treatment of functional nervous disorders and for sixteen years was psychologist to Dr Barnardo's Girls' Village Home She will be remembered by those who knew her well for her wisdom, loyalty, kindness, and understanding

ALEXANDER McC D MONYPENY, M B , B Ch Belf

The death occurred last month under pathetic circumstances of Dr Alexander McC D Monypeny at his residence in Belfast He was only 33, and his decease followed unexpectedly upon a chill which developed into pneumonia

Graduating in 1927 at the University of Belfast, he spent a year in the Royal Victoria Hospital, Belfast, and on the death of his father, who was a well known and much respected practitioner in Belfast, he succeeded to the practice From the first he showed himself to be possessed of no ordinary ability, but to have a natural gift for his chosen work

A personal friend writes "Alec Monypeny had many friends and intimates He attracted one to him by his generous and kindly nature Considering how hard he worked and how few holidays he enjoyed it was remarkable how much he had seen and done He was well read and had a wide knowledge of affairs which made him a delightful companion and a resourceful friend He was tireless in his energy and conspicuous among his patients for his kindly and understanding nature , nothing was too much trouble for him where their welfare was concerned, and rich and poor alike, he held the same high reputation with both He took special pains to keep himself abreast of the progress of medical knowledge, and at the time of his death had already extended his practice to become one of the foremost in the city His memory will remain dear to all who knew him and to those who were privileged to share his friendship"

JAMES ERNEST LONG, M D Brux , M R C S Eng

Dr James Long, who died in December last, led a notable career as a medical missionary Born in 1874, a member of a well known Bath family, he was educated at King Edward's School, Bath, and Trowbridge High School, and started his career in a well known pharmaceutical business Determining to enter the medical profession, he became a student at the Bristol medical school, and took the English double qualifications in 1898, subsequently graduating as M D Brux He held house appointments on both the surgical and medical sides, at the Bristol General Hospital, and was for a time house surgeon at the Torbay Hospital. He then started in private practice at Weston, commencing at the same time his strenuous work as a lay evangelist While attending to his practice he found time for extensive parochial work, and over a long period was an effective speaker at many religious gatherings, urging upon large audiences the responsibilities of the practical Christian life On the outbreak of the war he joined up immediately, and during his service in England and later abroad he continued his double function as doctor and missionary About sixteen years ago he felt a special call to prosecute this work in India. There he travelled up and down the country going into the remotest parts, and while carrying on his religious work rendered medical aid to the Indians, especially in urgent cases, while frequently he replaced the medical officers at hospitals, thus giving them an opportunity of a much needed holiday He journeyed with his car, and a medical van, into many remote parts of the Empire, where the natives may have seen a white man for the first time, and the value of his beneficent energies was universally and warmly recognised, while throughout he paid his own expenses.

On his return from India, obviously broken in health, he continued to devote himself to his Evangelising work in this country and he collapsed and died suddenly at a religious meeting

THOMAS GOODALL NASMYTH, M D , D Sc , F R C P & S Edin , D.L

The announcement is made of the death, after a short illness, at the age of 81, of Dr T G Nasmyth, whose name has been associated for many years with the progressive side of public health in east Scotland Up to the time of his death he was closely connected with the conduct of hospital and public health matters in Edinburgh A native of Fife, he graduated as M.B , C M in 1876, obtaining the degree of D Sc (public health) in 1887 and M.D in 1889 He took the D P H Camb in 1886, and obtained the F R C S Edin in 1910 In 1913 he was elected F R C P Edin After some years spent in general practice, he was appointed M.O H for Fife, Kinross, and Clackmannanshire, a post which he held for 20 years, when he came to Edinburgh, where he found many outlets for his activity He entered the town council in 1921, served for a term as a magistrate, and took a keen interest in the public health services of the city, being at the time of his death chairman of the Royal Maternity and Simpson Memorial hospital, convener of the medical committee of the Deaconess hospital, vice chairman of the Royal Dick Veterinary College and of the Board of the Animal Diseases Research Association He was also a member of various consultative committees of the Scottish Department of Health, a director of the Highland and Agriculture Society of Scotland and of the Scottish National Housing Company while he gave evidence before various committees of the House of Commons on Miners' Eight Hours Day, Miners' Diseases, and Death Certification. He wrote many papers on medical, surgical, and public health questions, and was the author of one book, The Kingdom Its Characteristics and Distinguished Sons" He was a J.P for Fife and a D.L of the City of Edinburgh

As will be gathered from this list of activities Dr Nasmyth was endowed with a fine constitution and inexhaustible activity of both mind and body which combined with his keen business capacity enabled him even in his later years to take an important place in the work of the community and to lead a life full of interest and usefulness up to the end of his 81 years He is survived by Mrs Nasmyth and one daughter

GEORGE PICKLES ALDERSON M B , Ch B Vict

THE death occurred early in January of Dr George Pickles Alderson a well known medical practitioner at Turton where he spent the greater part of his professional life He received his medical education at the University of Liverpool and graduated as M.B Ch B Vict in 1899 He served for a time as house physician at the Royal Infirmary Liverpool before establishing himself in practice at Turton where he became prominent through his professional and public activities He was for twenty years a member of the borough council and chairman of various subcommittees and in 1925 was appointed J.P for the county of Lancashire During the latter part of his life he gave up a good deal of his private practice but he retained several official positions while his medical practice was continued by his son in law Dr James Cumming He was always particularly active on the county magistrates bench where a sound judgment and genial disposition made him a valuable colleague He was very much interested in probation work and in the activities of the Juvenile Court Apart from his medical and public work Dr Alderson was well known for his interest in pigeons was a leading member of the Manchester Flying Club and owned at different times many prize-winning birds

CHARLES JAMES MILLIGAN L.R C P , L.R C S Edin D P.H Belf

THE death took place on Jan 8th at his house in Ligoniel Belfast of Dr Charles Milligan whose connexion with the medical profession in Belfast had lasted for almost half a century He received his medical education at Edinburgh and qualified in 1888 as L.R C.P L R C S and immediately started in practice in Ligoniel He was appointed dispensary doctor of the district 45 years ago gained an extensive connexion and held a high place in the affections of a wide circle which was exemplified when some 20 years ago on his recovery from a serious illness the residents in his own district joined with friends in all parts of Belfast in presenting him with an illuminated address He retired from his private practice on his appointment as medical officer of health under the Belfast and Castlereagh Rural Council, an appointment which was terminated by his superannuation last year

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PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Reassembly after Christmas Recess

THE House of Commons reassembled on Tuesday, Jan 19th after the Christmas recess

QUESTION TIME

TUESDAY JAN 19TH

Industrial Health Research

Mr WILFRID ROBERTS asked the Home Secretary if any further report had been received from the Industrial Health Research Board with regard to the effects of noise on the health of the worker —Sir JOHN SIMON replied : I am informed by the Medical Research Council that they have not received any further report on the subject from the Industrial Health Research Board but that investigations are still proceeding I understand that great difficulty is being experienced in finding suitable opportunities or methods for detecting and measuring any effects which noise may have on the workers

Miners and Silicosis

Mr JAMES GRIFFITHS asked the Home Secretary the number of applications for certificates of disablement received by the medical board under the Various Industries (Silicosis) Schemes from among coal miners in South Wales in the year ended Dec 31st 1936 ; the number of certificates granted ; the number of applications rejected ; and the number of *applications* and certificates granted to anthracite miners in South Wales in the same period —Mr GEOFFREY LLOYD Under-Secretary Home Office replied The number of applications for certificates of disablement from coal miners in South Wales during the year was 532 Certificates were granted in 208 cases and refused in 253 cases Of the applications 311 were from anthracite miners of whom 18[illegible] were certified and 115 refused

Mr GRIFFITHS asked if the hon. gentleman was not aware that these men who had been refused certificates were all disabled in consequence of having inhaled dust in their occupation He asked if the Government proposed to bring forward a measure to give elementary justice to men who had laid down their lives for their work ?

Mr LLOYD said that the fact that a man was not certified under this procedure did not necessarily prove that he suffered from an occupational form of respiratory disease He might be only suffering *from a form of respiratory* disease which might not be due to his employment

Mr GRIFFITHS asked when the report of the Government Committee appointed two years ago to go into this question could be expected ?

Mr LLOYD said that the Pulmonary Diseases Subcommittee of the Council recently held a meeting and decided that in the first instance it must come to a conclusion about the essential nature of diseases other than silicosis from which miners suffered As a result they had arranged for clinical and radiological tests on the subject

Physical Training in Schools

Mr SEXTON asked the President of the Board of Education whether he would give special consideration to the institution of a short specialised course of physical training for unemployed teachers to enable them to obtain employment as instructors in schools thus assisting in the Board's activities in improving the physical welfare of the pupils and at the same time giving hope to a body of young men and women who had already undergone a course of training in the training colleges —Mr GEOFFREY SHAKESPEARE Parliamentary Secretary to the Board of Education replied There are already a number of courses of varying duration in physical training for teachers who have left the normal training colleges and who may or may not have obtained posts and it is proposed to increase the number of these courses I do not think that the number of teachers who remain long out of employment after leaving the training colleges would be sufficient to justify special courses for them

Physical Condition of Monmouthshire School-children

Mr JOHNSTON asked the President of the Board of Education whether his attention had been called to the physical condition of the children in the boys' school at Blaina Monmouthshire, where the head master had reported that 50 per cent of his pupils were undersized and underfed, poorly clad, and badly shod, and, seeing that only 18 per cent received free milk, and that the *grants to the Monmouthshire education authority* were insufficient to provide adequate necessities, what steps he proposed to take in the matter —Mr GEOFFREY SHAKESPEARE replied My attention has been called to the physical condition of the children in the boys' school at Blaina which is not satisfactory, though on my present information I cannot fully accept the head master's statement I should welcome increased provision of free milk in this and other schools in Monmouthshire, but I understand that this provision is restricted by the severe income scale at present in force This question has recently been discussed with representatives of the local education authority, and I understand that the authority are considering the question of introducing a more generous income scale

Mr JOHNSTON asked whether, if the hon gentleman could not accept the head master's statement on the matter, he was not prepared to accept the statement made by two of the medical officers of health of the county who re examined these children in January of this year and discovered that children of 15 were, on an average, 16 lb. under weight, and that 40 of the boys were sitting in school with damp feet, and that there was poverty and despair all over the district ?

Mr SHAKESPEARE said his attention had been called to that report, which did not bear out the statement of the head master He understood that a fund had been raised to provide boots for the children.

Mr JOHNSTON asked if the hon gentleman was not aware that the official inquiry showed that the condition of affairs was worse than in the original statement made by the head master ?

Mr SHAKESPEARE said that it did not approximate at all to the statement of the head master

Inspection of Offices by Local Authorities

Mr SHORT asked the Minister of Health whether he had yet circularised local authorities calling attention to the provisions of the Public Health Act, 1936 respecting *the conditions of offices and the need for periodical inspection*, and, if so, what had been the nature of the response

Mr HERBERT WILLIAMS asked the Minister of Health what steps were being taken by local authorities under the provisions of the Public Health Act, 1935, to ensure that the provisions of the Act in respect of offices were effectively enforced —Sir KINGSLEY WOOD replied A circular drawing the attention of local authorities to their powers and duties under the Act in respect of offices is in course of preparation and will be issued well in advance of Oct 1st next, the date on which the Act comes into force

PUBLIC HEALTH

Vital Statistics for 1936

THE Registrar General has issued a provisional statement of the figures for birth rate, death rate, and infant mortality for the year 1936

—	Birth rate	Death rate	Infant mortality-rate
England and Wales	14 8	12 1	59
122 county boroughs and great towns including London	14 9	12 3	63
143 smaller towns	15 3	11 7	55
London (administrative county)	13 7	12 5	66

The smaller towns are those with estimated resident populations of 25 000–50 000 at the 1931 census

Note —The birth and death rates for England and Wales as a whole are calculated on the estimated mid *1936* population, those for the towns aggregates and for London on the estimated mid *1935* populations The birth rate is based on live births the death rate on crude deaths

The birth rate for 1936 is 0 1 per thousand above that for 1935 and is 0 4 above that of 1933, the lowest recorded The crude death rate is 0 4 above that of 1935 and 0 7 above that of 1930, the lowest on record The infant mortality rate is 2 above that of 1935, which was the lowest recorded, and is the same as that of 1934, the previous lowest record The rates are provisional and are issued for the information of medical officers of health, but they are not likely to require substantial modification

Influenza

The Ministry of Health has again speeded up the weekly return In the great towns of England and Wales 1100 deaths from influenza were reported during the week ended Jan 16th The graph, it will be seen, still closely follows that for the epidemic of 1932–33 and must disappoint those who were led to believe that the peak of the epidemic was reached a week ago There is however now some indication that it will *not* reach the level of the 1933 peak. In any case it should be borne in mind that there is a lag of 10–14 days in the graph of deaths behind the graph of onsets and the deaths must continue to rise for some time after the epidemic has begun to wane.

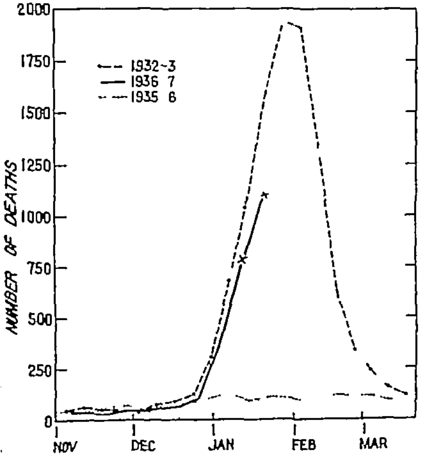
The impression of general mildness in the attacks is confirmed by the age distribution of the 768 deaths in the week ending Jan 9th

Ages	Deaths	Percentage of total.
0–24	47	6 1
25–44	92	12 0
45–64	262	34 1
65 and over	367	47 8
All	768	100 0

These figures show no movement towards the heavy mortality of young adults in the epidemic of 1918

We cannot yet give any precise up to-date figures for the distribution of deaths over different parts of the country, but a topographical analysis of the 768 deaths from influenza reported in the week ended Jan. 9th confirms the great preponderance already noted in the south-eastern area Of the total 311 occurred in London and 574 in Greater London The numbers in the Outer Ring were (in diminishing order) Willesden 23, West Ham 1[illegible] Ealing 16 Croydon 10, Tottenham 9 Heston and Isleworth Hornsey each 8, Hendon, Wembley each [illegible] Acton, Brentford, Leyton, Wimbledon each 6 Edmonton [illegible] Beckenham Southgate Wood Green each 4, [illegible] 3, Tottenham 2, Barking Mitcham each 1 Finchley (with 62 660 inhabitants) was the only town in the Outer Ring which reported no death Outside London the number of deaths (in diminishing order) was as follows Glasgow 33 Bradford 25, Leicester 24 Birmingham [illegible] Belfast 17, Bristol 16, Edinburgh and Leeds 1[illegible] Nottingham 12

In the absence of any exact regional figures last week from the Registrar General s department we may record the impression gained from reports which have reached us that the epidemic remains substantially the same in quantity and quality although abating in some localities and increasing in others In London the admissions to L.C.C. hospitals have dropped from 1600 to 900, the character of the attacks has not altered. The deaths in London rose from 311 to 344 in the week ending Jan 9th a large proportion being in old people In Brighton the position is unchanged except that bronchitis and otitis media are becoming more frequent complications Last week influenza reached Devon the cases there are running a short course mostly of the cerebral and/or respiratory type with some gastro-enteritis—the duration two to three days and only a short period of depression following; no serious complications In Wales there has been a sharp attack at Holyhead the worst experienced *since 1918 but of a type not serious to young people* schools and local places of amusement have been closed for the time In the north also the disease has spread somewhat but still in mild form At Bridlington contrary to the rule about half of the school-children seem to have been affected In the Newcastle district there has been a good deal of catarrhal bronchitis but no other complications and the deaths are not unusual for the season A report that half the inhabitants of Holy Island were stricken has proved on investigation to mean that while coughs and colds are evident in nearly every member of the community of 200 persons no one actually was very ill In Scotland the highest incidence has been in Glasgow where the deaths have been the highest recorded since 1920 In Edinburgh the attack rate remains the same and few children have been affected. But even the remotest parts of Scotland report inconvenience especially among light house keepers In Dublin there has been no extensive outbreak and few patients have sought hospital treatment The type is not severe the usual symptoms being headache muscular pains respiratory catarrh and brief pyrexia There is also in the city a good deal of severe bronchitis accompanied by tracheitis apparently unrelated to influenza as there is no myalgia or headache, and the attack is not followed by depression In Belfast the worst is reported over and in Cork the epidemic is said to be subsiding



Graph showing total deaths from influenza in the Great Towns on the last day of each week in three different years.

PLUS ÇA CHANGE

the more influenza remains the same In our issue of Jan. 21st 1837 it is remarked that ' the prevailing epidemic has become of so serious a character that we have felt it to be our duty to place on record a description of the malady as it has appeared in the district in which the office of THE LANCET is situated The surgeon of the parochial infirmary was able to give a statement week by week of patients receiving medical relief for the eastern division of St. Clement Danes the numbers suffering from influenza rising from 25 to 98 between December and January At no period it is said have so many persons been invalided in this locality and never has disorder of the animal functions been so general among the inhabitants A comparison is made with the typhus fever which raged in the same district during a portion of the last spring and although much more formidable *per se* was less dangerous in its complications The influenza affected persons of all habits rarely children until the epidemic was well advanced. Milder forms of the complaint consisted of sneezing nasal discharge sense of pressure and fullness at the frontal sinuses with headache and some degree of lassitude. These symptoms induced but very few to seek medical advice professional assistance indeed was neglected until the full establishment of the disease almost invariably indicated by the occurrence of cold shivers ' followed by pains in the head and limbs hoarseness, cough and prostration In several cases the disorder extended to members in the same family or house Uncomplicated cases however severe were not dangerous but when the disorder supervened on bronchitis death from asthenic congestion of the lungs was likely to occur A fortnight later a leading article sums up the outbreak which was then on the decline There is nothing about the symptoms and little about the treatment to distinguish it from present day practice

In every instance and at all times it evinced itself as a fever *sui generis* never even in its earliest stage, to be cut short by treatment as a common cold though capable by judicious management of being rendered in its subsequent progress much more mild —a sentence which (minus perhaps some commas) might have been written to-day The causation is summed up in the following words:

So far as enquiry has enabled us to form a judgment the disease is produced by some infectious poison *gaseous or miasmatous suspended in the atmosphere* favoured perhaps in its transmission from place to place by moisture and promoted in its reception by the action of cold debilitating the part to which the poison is applied But in a later article THE LANCET definitely hardened against the idea of influenza being propagated by contagion The unexampled rapidity with which it has overrun *localities* and even kingdoms renders it impossible to allow the assumption of transmission from one human body to another Nevertheless the interesting fact is recorded that one European State put British ships in quarantine for it

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INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JAN 9TH 1937

Notifications.—The following cases of infectious disease were notified during the week: Small-pox 0; scarlet fever 1817; diphtheria 12 5; enteric fever 31; pneumonia (primary or influenzal) 2333 puerperal fever, 33, puerperal pyrexia, 133, cerebrospinal fever, 34, acute poliomyelitis, 5, encephalitis lethargica, 5, dysentery, 37, ophthalmia neonatorum, 88 No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals for the London County Council on Jan 15th 1937 was 3898 which included Scarlet fever 895 diphtheria, 1033, measles 14 whooping cough 548 puerperal fever, 16 mothers (plus 5 babies) encephalitis lethargica, 284, poliomyelitis, 2 At St Margaret's Hospital there were 14 babies (plus 4 mothers) with ophthalmia neonatorum

Deaths—In 122 great towns, including London, there was no death from small-pox, 1 (1) from enteric fever, 7 (1) from measles, 5 (1) from scarlet fever, 21 (9) from whooping cough, 50 (13) from diphtheria, 31 (12) from diarrhœa and enteritis under two years, and 768 (311) from influenza. The figures in parentheses are those for London itself

Hull and Swansea each had two deaths from measles Manchester 2 from whooping cough Fatal cases of diphtheria were reported from 24 great towns, Liverpool 7, Manchester 4, St Helens 3

The number of stillbirths notified during the week was 261 (corresponding to a rate of 37 per 1000 total births), including 41 in London.

MEDICAL NEWS

University of Cambridge

The chair of physiology at the University will fall vacant on the retirement of Sir Joseph Barcroft at the end of September Candidates for the chair should communicate with the vice-chancellor before Feb 20th

The title of degree of B Chir has been conferred on M P Shackle and W F Young

Dr D V Davies and Dr W R M Morton have been appointed university demonstrators in anatomy for three years

University of London

At recent examinations the following candidates were successful —

D P H

Part I—J K Adranvala, D M Blair, Kathleen G Brimelow Joyce M Brockington P N Chatterjee A B Christie, Kitty K Conrad J S Cookson, Teresa I M Craig Iris M Cullum C F Cumings, B K De Silva Samuel Graham, Eva M Gray, H F Green R M M Hunter J D Lendrum S E D Masilamani B B Mukerjee Douglas Murray A F S Perera, Violet M Spiller, T S Szo J W P Thompson A F Turner H M van der Wall Sarah C B Walker L A F Wiles and Isabel A M Woods

University of Aberdeen

Dr John Stirling Young, professor of pathology in the Queen's University, Belfast, has been appointed to the chair of pathology in the University in the place of Prof Theodore Shennan who has resigned

Dr Young graduated in arts at the University of Glasgow in 1919 and B Sc in 1921 He took his medical degree with honours in 1923 and a year later was appointed assistant in the pathology department of the University of Glasgow and assistant pathologist at the Western Infirmary In 1927 he went to Leeds as reader in experimental pathology and assistant director of cancer research at the university Two years later he was awarded the Bellahouston medal for his M D thesis In 1932 he took up his present position During the war Dr Young served with the 8th Cameron Highlanders and later as captain and adjutant in the Black Watch He was awarded the Military Cross His contributions to pathological journals include studies of hyperplasia and metaplasia produced experimentally

Royal College of Surgeons of England

A meeting of the council was held on Jan 14th with Sir Cuthbert Wallace, the president, in the chair A resolution of condolence was passed on the death of Sir John Bland Sutton, formerly president of the College The Hallett prize was presented to Mr Robert Evan Owen Williams, of University College Hospital The president was elected to represent the College at the forthcoming Coronation ceremony Dr John Beattie, conservator of the museum and director of research, was appointed representative of the College on the Huxley memorial lecture committee Sir Arthur Keith, F R S, was reappointed as the representative of the College on the joint committee of anthropological research and teaching of the Royal Anthropological Institute Mr Eardley Holland was appointed to represent the College on the Central Midwives Board Mr L R Braithwaite was reappointed to the medical advisory committee of the British Health Resorts Association

The council entered into a contract with Messrs Higgs and Hill for the rebuilding of the upper floors of the College for the new Bernhard Baron research laboratories The council gratefully received a gift of £25 from Mr Walter Radcliffe M R C S for the purpose of cancer research, and a gift from Lord Moynihan of Leeds and Almina, Countess of Carnarvon, of the instruments used by the late Lord Moynihan at Alfred House The Cheltenham General and Eye Hospital was recognised under Sections 21 and 23 of the regulations relating to the education and examination of candidates for the diploma of fellow in respect of the post of house surgeon at the General Hospital A diploma of fellowship was granted to Reginald George Worcester, of the University of Melbourne and St Bartholomew's Hospital and a diploma of membership to Bernard Joseph Green, of the University of Liverpool

The following diplomas were granted jointly with the Royal College of Physicians of London —

Diploma in Public Health—R M Campbell A B Donald P J Doody M S A Hamid Enid A Hughes Vida L [illegible] Clement Muir Kulaveerasingham Somaskander, and H I Stevens

Diploma in Psychological Medicine—K C Bailey, B P Bhattacharjya C M Carlyle Gall L A Collins J G Dewar D S Fairweather, Hunter Gillies Lilian A Hayward B E Kirman E H Kitching A R McPherson M L Meade-King T A Ratcliffe D E Sands W W Sargant A S Thorley and D B Watson

Diploma in Laryngology and Otology—D L Brown, C W Dixon Narendranath Dutt, G A Jamieson and R N [illegible]

Lectures in Geology

Twelve Swiney lectures on Ice Ages will be delivered by Mr Frederick Walker, D Sc, at the Imperial College of Science Exhibition road, South Kensington, on Mondays, Wednesdays, and Fridays at 5 30 P M, from Feb 8th to March 24th Admission will be free

Society of Public Analysts

On Wednesday, Feb 3rd this society is holding a [illegible] meeting with the food group of the Society of Chemical Industry at the rooms of the Chemical Society, Burlington House, Piccadilly, W There will be two sessions, the first at 5 15 P M and another at 8 15 P M, which will be devoted to a discussion on the less known constituents of [illegible] and their examination

Laboratory for Testing Food

On Jan 19th Sir William Bragg, P R S, opened an extension of the joint laboratories at Holloway of the British Association of Research for the Cocoa, Chocolate, Sugar Confectionery, and Jam Trades and of the British Food Manufacturers' Research Association The laboratories were founded 15 years ago and the Government has contributed £50,000 and the members of the [illegible] about £110,000 towards the cost

Royal Sanitary Institute

A meeting of the institute will be held in the Town Hall, Halifax on Friday, Feb 12th, at 4 45 P M, when [illegible] J Pollard, M R C V S, will open a discussion on [illegible] and dairies legislation and Mr J W Beaumont, a discussion on housing past, present and future Visits [illegible] be made to the water purification plant, the new flats [illegible] working class women the disinfestation plant and the new isolation hospital where a short address on the future of the isolation hospital will be given by Dr G C F Roe, medical officer of health for Halifax.

Sir Ernest Graham Little has been elected an honorary member of the Polish Dermatological Society

St. Mary Abbots Hospital Kensington

On Jan. 15th the Bishop of Kensington opened a new operating theatre unit and an X ray department at this hospital A new underground service subway connects the new buildings with the hospital and enables patients to be conveyed under cover to the new theatre and X ray units. The extensions have cost about £13,500 Among those present was Miss Esther Rickards F.R.C.S chairman of London County Council hospital management sub committee who said since 1934 ten new operating theatres and X ray departments had been opened in London County Council hospitals.

New Readerships at Leeds

Our Leeds correspondent writes The two new posts of reader in medicine and reader in surgery which are being instituted by the University should prove very attractive The duties are intended to be those of research in the two subjects and especially of the correlation of clinical and laboratory methods It is suggested that applicants should not be more than 35 years of age and it is indicated that preference will be given to those candidates who possess either the membership of the Royal College of Physicians of London or the fellowship of the Royal College of Surgeons of England The salaries offered are £600 a year The duties will include a considerable amount of teaching and this is especially necessary in view of the increase in the number of students. Application has been made to the board of the Infirmary for the granting of facilities to the holders of the two posts to carry out the clinical parts of their duties within its walls and this has been readily granted.

Child Guidance Council

The third biennial child guidance inter-clinic conference will be held on Jan 29th and 30th at Friends House Euston road London N W and at B.M.A House Tavistock-square W C which is near by The secretary of the council Dr D R MacCalman may be addressed at Woburn House Upper Woburn place W C

The council have also arranged a vacation course on child psychology which will be held from March 31st to April 9th at Berridge House Fortune Green road London N W The programme will include lectures on normal emotional growth and its bearing on good mental health (Dr J R. Rees, Dr Henry Wilson Dr Grace Calver) clinical experience in dealing with behaviour difficulties (Dr William Moodie Dr D R MacCalman Dr Hamilton Pearson) and intellectual development and its relation to problems of learning (Miss L. G Fildes Mrs Susan Isaacs Miss M MacTaggart and Miss C Simmins) Further particulars of this course may also be had from the secretary

Schrötter's Centenary

On Jan 30th the University of Vienna and the Vienna Rhino-laryngological Society are to celebrate the centenary of Leopold von Schrötter who was born on Feb 5th 1837 He was one of the great pioneers of the specialty and the results of his researches and methods still have a place in modern laryngology Schrötter was the founder and first chief of the University laryngological clinic in Vienna, the first specialist clinic in the world He was also one of those who began the modern campaign against tuberculosis At Alland near Vienna he founded the first climato-dietetic establishment for tuberculous patients and this became a model for all similar institutions In the Arkadenhof of the University a marble memorial tablet with a medallion of Schrötter by Prof L R von Zumbusch will be unveiled Prof Arzt the rector of the University Prof Wilhelm Kerl the dean of the medical faculty Prof Josef Sorgo as a late pupil and assistant of Schrötter and Prof Hermann Marschik as laryngologist and president of the Vienna Rhino laryngological Society will pay tribute to the great man Replicas of the medallion and further particulars may be obtained from Prof M Weinberger Wien IX Brucknerstrasse 4

Congress in Algiers

The eighth Congrès International de Haute Culture Médicale will be held in Algiers from March 25th to April 6th. The work of the congress will be divided into six sections: infectious tropical and subtropical diseases (president Senator Maragliano Genoa) syphilis and dermatology (presidents Prof Milian and Prof Levaditi, Paris) cardiovascular diseases (president Prof Laubry Paris) hæmatology general medicine and social medicine (president Dr Haremann Paris) During the congress a meeting will be held to pay tribute to the work of Laveran Manson Ross Marchiafava Celli, and Grassi at which Prof Brumpt (Paris) Dr Sergent (Algiers) Dr Manson Bahr (London) and Mme Celli will take part Until March th Mr L. W Tomarkin the organiser may be addressed at the Institut Alfred Fournier Boulevard Saint Jacques 25 Paris, and afterwards care of the Gouvernement Général de l'Algérie Alger

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Medical Diary

Information to be included in this column should reach us in proper form on Tuesday and cannot appear if it reaches us later than the first post on Wednesday morning

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1 Wimpole-street W
MONDAY Jan 25th
Odontology 8 P.M Mr F Vaughan Toomey Therapeutics of Daily Practice Dr Victor Goldman Vinyl Ether as a Dental Anæsthetic
TUESDAY
Medicine 5 P.M Prof Bruce Perry Course and Management of Congenital Heart Disease Dr Terence East Dr C Muir and Dr J W Brown will also speak
WEDNESDAY
Comparative Medicine 5 P.M Discussion Prof L. S P Davidson Major G. Davenport, and Major D S Rabagliati Purpuric Condition in Man and Animals.
THURSDAY
Urology 8.30 P.M Mr W D Doherty: The Urological Complication of Diverticulitis Mr W J Underwood: Recent Observations on the Pathology of Hydronephrosis
MEDICAL SOCIETY OF LONDON 11 Chandos-street, W
MONDAY Jan 25th.—8.30 P.M. Dr John Beattie and Prof John Ryle Value of Experimental and Laboratory Training in Medical Education
MEDICO LEGAL SOCIETY
THURSDAY Jan 28th—8 30 P.M (Manson House 26 Portland place W), Mr H E Cox D Sc: Some Forensic Aspects of Dermatitis
SOCIETY OF MEDICAL OFFICERS OF HEALTH 1 Thornhaugh-street W C
Fever Hospital Medical Services Group.
FRIDAY, Jan 29th—4 P.M Dr James Anderson Dr Robert Cruickshank and Dr Maurice Mitman on Acute Enteritis

LECTURES, ADDRESSES DEMONSTRATIONS &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND Lincoln's Inn Fields W.C.
MONDAY Jan 25th—5 P.M Dr S Zuckerman Tissue Specificity in Relation to Sex Hormones
WEDNESDAY—5 P.M Dr Zuckerman The Interrelation of Endocrine and Neurovascular Factors in the Menstrual Cycle
FRIDAY—5 P.M Mr C P G Wakeley: The Surgery of the Parapituitary Region (Hunterian lecture.)
UNIVERSITY OF LONDON
MONDAY Jan 25th—5 P.M (University College Gower street, W C) Mr H R Ing D Sc Chemical Structure and Pharmacological Action (First of six lectures)
BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane road, W
MONDAY Jan 25th—2 30 P.M Dr H MacLean: Nephritis and Allied Conditions
TUESDAY—2 P.M Dr J Gray Pathology of the Liver
WEDNESDAY—Noon, clinical and pathological conference (medical) 2 30 P.M clinical and pathological conference (surgical) 4 30 P.M Mr A S Parkes F R S Experimental Endocrinology
THURSDAY—Noon clinical and pathological conference (obstetrics and gynæcology) 2 30 P.M, Dr Duncan White Radiological Demonstration 3 30 P.M Dr A A Moncrieff: Hygiene of the Fœtus and the New Born Child
FRIDAY—2 P.M operative obstetrics 2 30 P.M Mr W B Gabriel Surgical Diseases of the Rectum 3 P.M department of gynæcology pathological demonstration
Daily 10 A.M to 4 P.M medical clinics, surgical clinics and operations obstetrical and gynæcological clinics and operations

WEST LONDON HOSPITAL POST GRADUATE COLLEGE Hammersmith W 6

Monday, Jan 25th —10 A M, skin clinic 11 A M surgical wards 2 P M, operations surgical and gynæcological wards medical surgical and gynæcological clinics 4 15 P M Mr Green Armytage The Unexpected in Normal Labour

Tuesday —10 A M medical wards 11 A M surgical wards 2 P M operations, medical, surgical and throat clinics 4 15 P M Dr R W Ironside Complications of Anæsthesia

Wednesday —10 A M children s ward and clinic 11 A M, medical wards 2 P M, gynæcological operations medical, surgical and eye clinics 4 15 P M, Mr H P Gibb Demonstration of Eye Cases

Thursday —10 A M neurological and gynæcological clinics Noon fracture clinic 2 P M, operations medical surgical, and genito urinary and eye clinics 4 15 P M Dr W S C Copeman Chorea and Still's Disease

Friday —10 A M medical wards, skin clinic Noon lecture on treatment 2 P M operations medical, surgical and throat clinics 4 15 P M Mr Grant Batchelor Surgical Lecture.

Saturday —10 A M children s and surgical clinic. 11 A.M medical wards

The lectures at 4 15 P M are open to all medical practitioners without fee

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION 1 Wimpole-street W

Monday Jan 25th to Saturday, Jan 30th —St John s Hospital, Leicester square, W C afternoon course in dermatology (open to non members) —National Temperance Hospital *Hampstead road N W, Tues*, 8 30 P M Mr R C Brock Thorax Thurs 8 30 P M Mr Hamilton Bailey Testicle and Prostate —St Peter s Hospital, Henrietta street W C, all day advanced course in urology —Brompton Hospital, S W all day course in chest diseases —Courses arranged by the fellowship are open only to members

NATIONAL HOSPITAL Queen square W C

Monday, Jan 25th —3 30 P M, Mr Elmquist Demonstration of Re-educational Methods

Tuesday —3 30 P M Dr Denny Brown The Nervous Control of the Sphincters

Wednesday —3 30 P M Dr Kinnier Wilson Clinical Demonstration

Thursday —3 30 P M Mr Jefferson Head Injuries

Friday —3 30 P M Dr Walshe Disseminated Sclerosis

Out patient clinic daily at 2 P M

HOSPITAL FOR SICK CHILDREN Great Ormond street W C

Thursday Jan 28th —2 P M Dr B E Schlesinger Glandular Therapy 3 P M Dr A Signy The Use of Vaccines and Sera

Out patient clinics daily at 10 A M, and ward visits at 2 P M

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale W

Thursday, Jan 28th —3 P M, Prof Golla Clinical Demonstration

LONDON SCHOOL OF DERMATOLOGY 5 Lisle street, W C

Tuesday Jan 26th —5 P M Dr L Forman Sycosis

Thursday —5 P M, Dr W K. Sibley Electrotherapeutics

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL Gray s Inn road W C

Friday Jan 29th —4 P M Mr A Lowndes Yates The Treatment of Early States of Deafness

ST JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE Ranelagh road S W

Friday, Jan 29th —4 30 P M, Mr H J Taylor Ph D The Physical Basis of Methods of Treatment in Rheumatic Diseases

LEEDS GENERAL INFIRMARY

Tuesday Jan 26th —3 30 P M Dr Hellier The Diagnosis of Eczema in Relation to Treatment

ST MARY S HOSPITALS Manchester

Thursday Jan 28th —4 15 P M (Whitworth street West Hospital) Dr C P Lapage Diseases of the Newborn

GLASGOW POST GRADUATE ASSOCIATION

Wednesday Jan 27th —4 15 P M (Eye Infirmary) Mr W B Inglis Pollock Glaucoma

Appointments

Cooke W T M B Camb M R C P Lond has been appointed Resident Medical Registrar at the Queen s Hospital Birmingham

Evans C F, F R C S Eng Senior Resident Medical Officer at The King Edward Memorial Hospital Ealing

Hailwood J G M D Liverp Medical Registrar and Tutor at the Royal Liverpool Children s Hospital

King, F F M B Brist F R C S Eng D O.M.S Hon Ophthalmic Surgeon to the Putney Hospital

Lyll J S M B, F R C.S Edin Senior Resident Surgical Officer at the Royal Infirmary, Perth

McGregor, H G M D M R C P Lond Hon Medical Registrar at the Royal Sussex County Hospital Brighton

Mulvany D F M B Lond F R C S Eng Surgical Registrar at the Hospital of St John and St Elizabeth London

Neill, J H M B Glasg Hon Anæsthetist to the Gloucestershire Royal Infirmary Gloucester

Stein, B B M B, F R C S Edin, Resident Surgical Officer at the Royal Infirmary, Doncaster

Sutcliffe M L, M R C S Eng, D P H, D P.M, Medical Officer of Health for Gloucester and Newent Rural Districts and the Borough of Tewkesbury, and Assistant County Medical Officer to the Gloucestershire County Council

Wilson F Edna M B Dubl, *Anæsthetist at the Chelsea Hospital for Women*

London County Council Hospital Staff —The following appointments promotions and transfers are announced A.M O (I) and (II) = Assistant Medical Officer, Grades I or II. D.M O = District Medical Officer Temp = Temporary

Briggs G O M B Camb, M R C P Lond A.M O (I), Grove Park

Glover F R M B Lond, A M O (II) Grove Park

O Sullivan T J M D Dubl D P H, A.M O (II.) Colindale

Lawrence, Beryl J, M B House Physician, Downs

O Leary, Nora M B, N U Irel D P H House Physician, High Wood

Sheppard, C L M B, House Physician Downs

Cooke Mabel J M B Lond, D P H House Physician, North Western

Godber, G E B M Oxon M R C P Lond, D.P.H, House Physician North Western

Hardy, Robert M B Edin, D P H A.M O (II) Temp South Eastern,

Hall, Marjorie K, M B Lond D P H A.M O (II) South Western

McEldowney, A P, M A M R.C.S Temp., D.M.O., Wandsworth and Putney

Hurford, J V M D Belf B Ch M R C P D.P.H., A.M O (I) Colindale

Cann A M R, M B Lond, D C H, A.M O (II) Brook.

Certifying Surgeon under the Factory and Workshop Act Dr N H Harrison (Presteign District Radnor).

Births, Marriages, and Deaths

BIRTHS

Howard Jones —On Jan 11th at Devonshire-place W the wife of Dr Norman Howard Jones of Gloucester terrace W, of a daughter

Rau —On Jan 14th at Bentinck street, W the wife of Dr Leo Rau of Highgate N, of a son

Renshaw —On Jan 9th, at Mottram St Andrew, Cheshire the wife of Dr Arnold Renshaw, of a daughter

Scharff —On Jan 10th at Singapore, the wife of Dr J W Scharff of a son

Williams —On Jan 14th, at Guildford, the wife of Dr Parker Williams of a daughter

MARRIAGES

Bannerman—Diamond —On Jan 16th at St Charles Catholic Church Gosforth, Flight Lt Hugh Bannerman R.A.F (Medical Unit) to Hilda Mary Diamond of Gosforth

Elwell—Lewis —On Jan 7th at St Mary's Church Hornsey N, Graham Gordon Wilmot Elwell M R C.S to Kathleen Lewis daughter of Mr W E J Lewis Bromley Kent.

Henderson—Long —On Jan 18th at Holy Trinity Church Brompton S W Alexander Stewart Henderson M.B to Ruth daughter of the late Mr D A Long, Grahamstown South Africa and Mrs Long Amersham, Bucks

Parsons—Remfry —On Jan 16th 1937 at Cheltenham [illegible] Gregory Parsons M A M B M R C P son of Professor and Mrs L G Parsons of Birmingham to Frances [illegible] daughter of Mr and Mrs Maurice Remfry of Cheltenham

Stuart—Haynes —On Jan 9th at Torquay, John Ward Stuart, M R C S of Elgin crescent W to Loma [illegible] Shokell daughter of Mr Stanhope Haynes of Torquay

DEATHS

Cripps Rogers —On Jan 15th at Eastbourne Henry Cripps Rogers M R C S Eng L.S A in his 94th year

Dayman —On Jan 13th, at Bristol Barnfield Dayman, M.R.C.S Eng, aged 89

Ellis —On Jan 16th at Bearsden, Prof David Ellis D.Sc Ph D F R S E Professor of Bacteriology and Superintendent of the Schools of Pharmacy and Bakery [illegible] Technical College Glasgow

Hunter —On Jan 13th William Hunter, C B M.D [illegible] LL D Edin, F R C P Lond aged 76

Keays —On Jan 14th at Keynsham Somerset Lieut-Col W Keays R A M C (retd) in his 87th year

Lyon —On Jan 16th at Bournemouth, George Lyon M.B Aberd

McCall —On Jan 12th at Victoria road S W William McCall M D Brux L S A aged 78 years

MacWilliam —On Jan 13th at Edinburgh, John Alexander MacWilliam M D Aberd LL D F R.S Emeritus Professor of Physiology (Univ of Aberdeen) Cults

Milward —On Jan 10th at St Mary's Hospital Paddington John Kenneth Milward M R C S Eng of Radlett Herts

Nasmyth —On Jan 16th at Edinburgh Thomas Goodall Nasmyth, M D Edin aged 81

Wylie Moore —On Jan 12th at Bexhill on Sea William Andrew Wylie Moore M B Edin formerly of [illegible] Lancs

N.B —A fee of 7s 6d is charged for the insertion of Notices of Births Marriages and Deaths

NOTES, COMMENTS, AND ABSTRACTS

A MODIFIED BILLROTH I

Dr J. Schoemaker, professor of surgery at The Hague, gave the Hunterian lecture of the Hunterian Society at the Mansion House on Monday evening, setting out the principles and methods he had found successful in the surgical treatment of gastro-duodenal ulceration and inflammation. He began with an assurance that ulcers can be cured by medical treatment; only after failure of prolonged and regular medical treatment is it the physician's duty to hand his patient over to the surgeon. And he ended with the assurance that though the surgeon cannot cure all his patients he can heal more than 90 per cent. of them. The surgical treatment perfected by Schoemaker is a modification of the Billroth I operation of *partial gastrectomy*. Though fairly radical this aims at leaving behind a great part of the body and more than half of the greater curvature, thus impairing as little as possible the antiseptic and hæmopoietic functions of the stomach. Schoemaker claims that pernicious anæmia has never resulted from this operation. The first part of the duodenum, the pyloric antrum and the gastric canal (the *Magenstrasse* of the Germans) are removed, quasi-normal form and function being restored by suture of the free end of the duodenum to the lower part of the cut surface of the stomach. After the operation the stomach is smaller than it was, but otherwise Schoemaker claims that it is normal. The contents are well mixed and leave slowly by an orifice that takes on some of the functions of a pylorus. Gastritis and duodenitis do not occur and the jejunum is not suddenly flooded with partially digested stomach contents, as it is after either gastro-enterostomy or the *Billroth II operation*. Schoemaker showed films to illustrate the normal folds of a healthy gastric mucosa after operation by his method, contrasting them with the large folds found in the inflamed mucosa after gastro-enterostomy.

There was, he suggested, some justification for regarding gastro-enterostomy as a disease. Not only did it induce the risk of gastritis and jejunitis, but it did not stop bleeding, prevent perforation or remove the ulcer. The chance that an ulcer thus left in situ might later become malignant he regarded as too small seriously to influence the surgeon's judgment. Gastro-enterostomy had indeed a definite value in the treatment of ulcer; undertaken for stenosis it was the beginning of gastric surgery and the results had not been too bad. He performed it in cases where the patient was weak and tired out with vomiting, where he was so stout that satisfactory access to the site of operation was impracticable, and also in certain cases of very fixed ulcers of the duodenum where gastrectomy was considered too dangerous. A follow-up of gastro-enterostomies done in 1925 had shown that ten years after operation 60 per cent. had no stomach troubles, 20 per cent. suffered in minor degrees and 20 per cent. had no relief or had had recurrences. No case had died as a result of the operation. On the other hand 10 per cent. of gastro-enterostomy cases required a second operation. Faced with a perforated ulcer Schoemaker's advice to the surgeon was first to consider saving the patient's life; then if the opening was small, the interval since perforation was short, and the condition of the patient was good, partial gastrectomy was the best operation. He had been successful himself in a few such cases. For bleeding ulcer operation was not the first resort, but where bleeding recurred it must be done. The mortality was high—about 30 per cent.—but one must remember that operation was undertaken in the most serious cases and that it was difficult.

Prof. Schoemaker showed a film of partial gastrectomy as performed by him with his special gastric clamp. His critics have pointed to the danger of leakage at the angle where the gastro-duodenal junction meets the oblique line of sutured stomach surface. Having himself had no death from leakage he regards this danger as negligible. His results in 783 cases show 82 per cent. with no complaints, 7 per cent. with minor complaints, and 11 per cent. with no relief or recurrence of symptoms. He described the modifications required in cases of unusual difficulty and gave a special warning against reoperation for gastritis following gastrectomy. This, he said, could never be successful.

THE ANTI-JERRY BUILDERS

The Housing Improvement Association held a luncheon at the Langham Hotel on Jan. 14th at which the Minister of Health was present and spoke on a scheme for improving the standards of house building. The scheme, which is to be administered by the National House Builders Registration Council, includes the registration of house builders and the certification of houses built according to their specification. The council is made up of representatives of building societies, building trades employers and operatives, architects, and we learn that Dr. J. Greenwood Wilson, medical officer of health for Cardiff, has been invited to serve upon it. While all who are working for an improvement in housing standards will welcome the proposed specification and the certification, the Association will not rid us of the unscrupulous builder who does not join it and who will flourish as long as the State allows him to deliver his wares and the public is unwise enough to buy them. But some good will certainly come out of this movement in standardising and raising the level of work amongst builders of mass-produced low-priced properties for which there is a big demand, by reduction of competition through a standard specification. This should react upon the public demand for soundness rather than show, and promote the popularity of the certificate. We can only trust that those who advance money for house purchase will insist upon the certificate.

THE BATTERSEA STORM

As we related on Jan. 9th, the honorary appointments at Battersea General Hospital (formerly the Antivivisection Hospital) were recently thrown open to public competition. An independent selection committee nominated a new staff omitting many of the former members. At the last moment the hospital board refused to accept the selection committee's recommendations in toto and the chairman (Mr. *Parkes*) resigned in protest with two of his colleagues. The remaining members of the board who are carrying on the management of the hospital have now reappointed all those members of the staff whose applications were disapproved by the selection committee. In a letter to the press, however, Lord Ernest Hamilton (chairman before June, 1935) and Sir Herbert Lush Wilson say that the board has come to the sad conclusion that unless a sum approaching £10,000 can be obtained we should not be justified in carrying on the hospital beyond another month."

GREASY LENSES

A CORRESPONDENT writes: "For some time past I have possessed a stick of jeweller's rouge which was presented to me. Having tried it on various metals and glass I have discovered that if a small piece of washleather is rubbed with the stick of rouge it makes an excellent wiper for dirty or greasy spectacle lenses, and one which can quite easily be kept in the spectacle case. The colour of this kind of rouge is due to the ferric oxide (Fe_2O_3) obtained by calcinating sulphate of iron, which gives it its cleansing properties, and not to the addition of carthamin, cochineal or other pigment as is the case with cosmetic rouge."

NEW PREPARATIONS

"TABLOID" CALCIUM GLUCONATE AND IRON (Effervescent) is issued by Burroughs Wellcome and Co, Snow Hill Buildings, London, E C 1 One tabloid dissolved in a tumblerful of water makes an effervescent draught containing 20 grains of calcium gluconate and 3 grains of iron and ammonium citrate The preparation is recommended for adults or children who may be suffering from a deficiency of calcium and iron, and especially for women during pregnancy and lactation

BENERVA BRAND VITAMIN B_1 —On March 28th last we reviewed a paper in which W Ritchie Russell described his use of vitamin B_1, given by injection, in the treatment of polyneuritis and other nervous diseases (see *Edinb med J*, 1936, **43**, 315) The preparation employed has now been put on the market by Roche Products Ltd (51, Bowes road, N 13), under the name of Benerva Each ampoule of 1 0 c cm is stated to be equivalent to 500 international units of the vitamin, and the dose may be either hypodermic or intramuscular Success has been claimed in treating various forms of polyneuritis, subacute combined degeneration of the cord, anorexia nervosa, and neuritis in pregnancy The manufacturers also mention many other diseases and disorders in which they have reason to think vitamin B_1 useful

SALICYLYSIN LINIMENT and OINTMENT contain 20 per cent of glycol iodosalicylic ester, a new organic compound of iodine and salicylic acid in readily absorbable bases The makers (Allen and Hanburys Ltd, Bethnal Green, E 2) say that they are non-irritant, non-staining, and practically odourless, and recommend them for fibrositis, subacute or chronic articular rheumatism, arthritis, sprains, sciatica, and other forms of neuritis

GABASOL is a germicide said to have a Rideal-Walker coefficient of 4 5 when tested against carbolic acid, using *Bacillus typhosus* (Lister strain) The advantages claimed for it include a low surface tension, giving great penetrating power, and a nearly neutral reaction, "it is non-toxic, non-poisonous, non-staining, and has a pleasing and refreshing odour it promotes rapid healing without any trace of irritation or redness" The manufacturers are Gale, Baiss and Co, Ltd, Canterbury-road, S E 15

VITA LIVE NATURAL GRAPE JUICE —This is a bottled grape juice (non-alcoholic) concentrated by a low-temperature process so that it retains its ferments and vitamins The only change, it is claimed is that about five-sixths of the water is removed, and the large bottles are described as containing the equivalent of 17½ lb of fresh grapes The high content of grape sugar (glucose) ensures that the juice will keep indefinitely and gives it a high calorie value (1600 per pint) According to the manufacturers (Vita Products, Ltd, 30, Finsbury-square, E C 2) it is rich in iron in easily assimilable form and has a gentle laxative and diuretic action, they put it forward as a natural fruit juice for children—supplying them with vitamins A and B—as a tonic and energiser" as a flavouring, and as a beverage Diluted with water or soda-water it makes a very pleasant drink.

Vacancies

For further information refer to the advertisement columns

Accrington Victoria Hosp —H.S £150
Bangor Caernarvonshire and Anglesey Infirmary —Hon Gynæcologist
Battersea General Hosp Battersea Park, S W —H P at rate of £120
Bedfordshire County Council —Asst County M O H, &c £800
Birmingham and Midland Hosp for Women —H S, at rate of £100
Blackburn Brockhall (Certified Institution for Mental Defectives) Langho —Asst M O, £500
Blackburn Calderstones Certified Institution for Mental De-tives Whalley —Med Supt., £950
Bootle County Borough —Asst M O H and Asst School M O £500
Bradford Royal Infirmary —Res Surg O £250
Bristol City and County —Asst M O H £500
Cardiff Royal Infirmary —Radium Registrar at rate of £2
Central London Throat, Nose and Ear Hosp, Gray's Inn road, W C —Third Res H S at rate of £75
Chester, County Mental Hosp —Deputy Med. Supt £6
Chesterfield and North Derbyshire Royal Hosp.—H S to Oph and Ear Nose and Throat Depts, at rate of £150
Croydon County Borough —Asst M O.H and Asst. School M O £500
Derby, Derbyshire Royal Infirmary —Gynæcological H.S. and Emergency Anæsthetist £150
Eastbourne, Royal Eye Hosp Pevensey road.—H.S. £100
East Ham Memorial Hosp, Shrewsbury-road, E —H P, at rate of £150
Elizabeth Garrett Anderson Hosp, Euston road N W —Asst Radiologist £100
Folkestone, Royal Victoria Hosp —Jun Res M O., at rate of £120
General Lying in Hosp York road, Lambeth S.E —Jun Res M O and Anæsthetist at rate of £100
Gloucester Barnwood House Registered Mental Hosp —Med. Supt £1500
Gloucester County Council —County M O.H and School M.O. £1200
Grimsby and District Hosp —Surgeon for Orthopædic Dept, and Fracture Clinic, £350
Guildford Royal Surrey County Hosp —H S, at rate of £15
Hertford, Ware Park Sanatorium.—Asst M O, £300
Hosp of St John and St Elizabeth, 60, Grove End road N W —Clin Asst in X Ray Dept £75
Kendal, Westmoreland County Hosp —H.S, at rate of £200
Kenya Mathari Mental Hosp Nairobi —Res Physician £
Lancaster, Royal Albert Institution for the Feeble Minded.—Res. Jun Asst. M.O £375
Leeds General Infirmary —Hon Aural Surgeon
Leeds Public Dispensary and Hosp —Sen Res M O, £900
Liverpool City —Res Asst M O's each £200
Liverpool Sanatorium Delamere Forest, Frodsham.—Sen and Jun Assts £325 and £225 respectively
London County Council —Asst M O s, Grade 1, £350
London Jewish Hosp Stepney Green, E —Hon Surgeon.
Maidstone, Kent County Ophthalmic Hosp —H S to Ear, Nose and Throat Dept at rate of £250
Maidstone, West Kent General Hospital —H.S, £175
Marie Curie Hosp, Fitzjohn's-avenue, N W —Asst Director
Metropolitan Hosp E —Psychiatrist.
Middlesex Hosp W —Res M.O, £400
Newcastle upon Tyne, Barrasford Sanatorium.—Res Med Asst, £250
Newcastle upon Tyne Hosp for Sick Children —Sen. Res. M.O, £250 Also H P and H.S, each at rate of £100
Newcastle-on Tyne, Wooley Sanatorium, near Hexham.—Asst M.O £350
Newport County Borough —Asst M O.H £500
Nottingham General Hosp —H S for Fracture and Orthopædic Depts, £300
Oxford Wingfield Morris Orthopædic Hosp, Headington.—Res H S £100
Pendlebury, Royal Manchester Children s Hosp —Asst. M O Out patients Dept., at rate of £150
Peppard Common, Oxon Berks and Bucks Joint Sanatorium—H P £250
Preston Sharoe Green Hosp —Jun. Asst Res M.O, at rate of £100
Princess Elizabeth of York Hosp for Children Shadwell, E—Asst Surg
Queen s Hosp for Children Hackney road E —Cas O at rate of £100
Royal Chest Hosp City-road E C —Clin Assts
Royal Free Hosp, Gray's Inn road W C —Hon Asst Physician
St Albans and Mid Herts Hosp Church-crescent —Res. H S £150
St John Clinic and Institute of Physical Medicine, Randolph road S W —Hon Cons Surgeon Also Clin Asst Orthopædic Surgeon
Sheffield Royal Infirmary —Clin Asst to Surg Dept, at rate of £300
Stoke on Trent Burslem Haywood, and Tunstall War Memorial Hosp —Res H.S at rate of £175
Stoke on Trent North Staffordshire Royal Infirmary —Two H Registrars
Surrey County Council —Asst. M.O £600
Swansea Hill House Infectious Diseases Hosp —Res M O, £
Walsall General Hosp —H S, at rate of £150
Westminster Hospital, Broad Sanctuary S.W —Hon Clin Asst to Gynæcological Dept
Woolwich and District War Memorial Hosp, Shooters Hill S E—Res M O £175

The Chief Inspector of Factories announces vacancies Certifying Factory Surgeons at Auchtermuchty Uffculme (Devon) Louth (Lincs) and Staindrop

SHEFFIELD ROYAL HOSPITAL —Two extra storeys are being added to the new miners' welfare which is being built at this hospital In one of the there will be accommodation for paying patients sum of £4000 has been contributed towards provi this accommodation

ADDRESSES AND ORIGINAL ARTICLES

RECENT AIDS TO THE PROGNOSIS OF PULMONARY TUBERCULOSIS *

BY R. R. TRAIL, M.C., M.D. Aberd., F.R.C.P. Lond.

PHYSICIAN TO THE ROYAL CHEST HOSPITAL AND TO THE PAPWORTH VILLAGE SETTLEMENT; LATE MEDICAL SUPERINTENDENT TO THE EDWARD VII SANATORIUM, MIDHURST

THE difficulty of the prognosis of pulmonary tuberculosis is so well established in medical literature that it is the theme of gloomy aphorisms by every well known writer on chest diseases in the latter half of last century. Samuel Gee summed up his ideas by saying: "Never attempt to forecast the probable duration of life in the case of phthisis. In this connexion there is only one thing that is sure, and that is, that if you do you will be wrong."

Even if an attempt was made at forecast in any individual case it was founded on mode of onset, while in type of established lesion it was, at best, only vaguely comparative. C. T. Williams and C. J. B. Williams (1897) are as dogmatic as any chest physicians of their own time in saying: "Acute phthisis is generally hopeless, while catarrhal phthisis, which is a primary feature of the tendency to excavation and the comparative absence of fibrosis, runs a less favourable course and a less limited duration compared with that of other chronic varieties, and especially fibroid"; and again: "It is in chronic tuberculous phthisis that the greatest triumphs of treatment have been attained when time, money, and perseverance are not lacking, and we can in most cases promise prolongation of life, and in others complete arrest of the disease. The patients who trace their diseases to pleurisy seem to have the best chances of life." This was no advance as against the statement of Fuller in 1862, when he said: "It can safely be said that the disease may kill in three weeks or a month from the date of its accession, or may run a chronic course of 20 or 30 years." Even at the beginning of this century, while Samuel West (1902) went so far as to state: "There is never any immediate danger to life unless with an onset of pneumothorax or hæmorrhage," his prognostic ideas were that: "Perfect cures are impossible, complete arrest cannot be expected in more than one or two per cent., and all we can hope for is that the progress will be held up by treatment."

All statements on the prognosis of phthisis are finally founded on the experience of the individual observer, restricted by current methods of diagnosis and treatment of the prevalent type of the disease. There is no reason to decry the pronouncements of these eminent physicians. Since their time we have advanced in methods of diagnosis, enormous strides have been made in treatment, from rest under sanatorium conditions up to active intervention by artificial pneumothorax and thoracoplasty, while we have the benefits of careful after-history reports and in recent years the development of laboratory aids from blood examinations. Moreover, we have no reason to crow over them even if we feel so inclined, for we are dealing with a disease in the majority of sufferers much more chronic than they encountered, with far less incidence of dangerous complications such as laryngeal involvement, more amenable to any form of treatment and often cured by none that we can claim part in, but even now too often already established to gross extent before our boasted advances have discovered its presence, so that we have missed what is of primary importance in both immediate and ultimate prognosis—an early diagnosis.

Such changing type of disease, together with further aids to assessment of lung destruction, especially radiography, led by natural consequence to the founding of prognosis much more on the extent of involvement than on the evidence of constitutional disturbances, until the latest report from Frimley Sanatorium (1935) is able to show that "The prognosis of chronic pulmonary tuberculosis varies directly with the extent of lung involved."

Sanatorium Treatment

The first work of any real value on the after-histories of patients treated on particular lines was that of Bardswell and Thompson in 1910. They made an intensive actuarial study of the experience of patients treated at Midhurst Sanatorium; their methods of "follow up" were so thorough that only minor improvements have been suggested, and their general conclusions have been in the main only strengthened by the many more recent investigations on similar lines.

Thus it is now accepted that mortality after sanatorium treatment is governed to a great extent by the condition in the first and second years after discharge, the two main factors being the comparatively early death of advanced cases, and the willingness or capacity of the patient to continue on the routine of life he has been taught during his residence. Not that this latter is any real new discovery; it is but a statistical verification of Fuller's statement that "It is neglect of rational means to sustain the general health for a sufficiently long time after improvement has commenced . . . which leads to the fearful mortality from phthisis."

Bardswell's figures showed that in cases that remain tubercle positive at the end of sanatorium treatment the ratio of actual deaths to the deaths expected is for males 21.8 in the general population, and for females 31.0. In cases which never had tubercle bacilli demonstrated in their sputum during their stay in the sanatorium he found the ratio to be 0.5 and 7.7 respectively. Clarke (1932) traced the after-histories of 700 patients of the Foster Green Hospital, Belfast; at the end of the 6th year after discharge only 22 per cent. positive sputum cases as against 72.5 per cent. negative cases were still alive. An investigation on 1700 patients treated at Midhurst Sanatorium between 1911 and 1929 (Trail and Stockman 1931) gives results which can be stated in slightly different form. The proportion alive 5 years after admission with positive sputum works out as follows for both sexes and all age groups combined, as based on the Turban-Gerhardt classification: Group I, 86.3 per cent.; Group II, 60 per cent.; Group III, 43 per cent. Although these percentages necessarily refer to a class of patient with advantages, both social and economic, in after-care as against the average working-class admissions to the public sanatoria of this country, they bear a very close resemblance to published statistics throughout Europe and America and state fairly accurately our present knowledge of the general prognosis for a given stage of the disease at the time of diagnosis. It must be very clearly understood, however, that they refer only to those sufferers willing and fortunate enough to be treated

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[*] The Mitchell lecture for 1938 delivered before the Royal College of Physicians of London on Nov. 12th.

in a sanatorium The Frimley report states "We believe this to be the first occasion on which statistical evidence has been produced to show the value of sanatorium treatment". The graphs provided demonstrate "that the mortality experience of patients who have had the advantage of a course of sanatorium treatment is more favourable than that of members of the general population suffering from Pulmonary Tuberculosis' This conclusion had been hinted at by the workers of the Prussian and Hessian Railway Sanatorium who had found from the after history of patients in Group I and Group II followed up to a period of 4–6 years from the date of diagnosis, that fully 20 per cent more were alive amongst sanatorium treated patients

At the end of his report Bardswell expressed the opinion that something further than sanatorium treatment was necessary if the prognosis of phthisis was to be materially improved, it is a striking corollary that the last published sanatorium report (Hartley 1935) proves that there is a very little change in the outlook of the average chronic case over the past thirty years As we have already seen, and will discuss more fully later, the crux of the problem lies in the difficulties of after care, and of the differentiation in prognosis amongst patients of like social conditions and apparently similar extent of disease

Collapse Therapy

Shortly afterwards there began the accumulation of a vast experience of collapse therapy from artificial pneumothorax up to thoracoplasty, and later of intermediate measures of paralysis of the diaphragm through operations of crushing, cutting, and evulsion of the phrenic nerve

ARTIFICIAL PNEUMOTHORAX

Twenty years ago pneumothorax was hailed as the greatest advance in therapy since the institution of sanatorium treatment Even 14 years ago when Burrell and MacNalty (1922) produced their monograph under the ægis of the Medical Research Council opinions on its value were unanimously favourable, and its occasional dramatic success in the advanced case gave it a value still hard to undermine The present brings more sober judgment, relegates it to special conditions and the treatment of particular symptoms in the early and moderately advanced stages of the disease, and tries, still with small success, to depose it from the false position of a panacea and the last hope in a late diagnosis of established fibrotic lesions

Much of the still present hopefulness comes from insufficient study of the material for investigation, and the deduction of false conclusions from the comparison of conditions essentially unlike We now realise that the indications for the induction of pneumothorax immediately, and per se, relegate the patient to a particular category completely apart from his neighbour with evidently similar extent of disease, that his individual symptoms or his particular blood picture which do not alter with ordinary measures under supervised rest routine, automatically place him in a lower grade for both immediate and ultimate prognosis We have learned that should we, in our well meant enthusiasm, submit a patient to such treatment without due consideration of the amount of tissue destruction present at induction, or do not take to heart the lessons which the first few weeks of its continuance can teach us we may not only fail in our efforts to arrest the disease but be the cause of dangerous complications which hasten death and preclude him from the advantages he might have received from surgery

An investigation carried out at Midhurst Sanatorium (Trail and Stockman 1932) showed that a Group I case has a definitely better prognosis under pneumothorax than under ordinary sanatorium treatment, but while it warrants a similar conclusion in the average Group II case, it does not encourage its employment in Group III Moreover the figures quoted reflect the gravity of cases considered for induction in the lower categories, for even when continued treatment was possible 22 per cent. of Group II and 42 per cent of Group III cases were dead at the end of a period averaging 5 years from the date of discharge from the sanatorium They also teach us that in all probability some might have had a distinctly better chance of survival if they had been submitted for thoracoplasty either at the time of induction, or when it was recognised that continued treatment was producing inefficient collapse

This does not detract from the enormous value of pneumothorax within its prescribed indications, every country has provided us with evidence of the brightening of prognosis since its introduction, and an excellent digest can be found in the monograph where Bentley (1936) reviews the experience of the London County Council and attempts to assess the value of the treatment by comparing the fate of 677 cases with that of 3329 treated by conservative methods only He shows that there is a gain of 129 53 lives at the end of 3 years, that is, an increase of 19 1 per cent in the number alive over the expected number amongst those conservatively treated. A smaller group followed for five years shows a gain of 18 per cent at the end of 3 years and of 19 8 per cent at the end of 5 years

Similar results are seen in the Frimley report which compares very carefully ordinary sanatorium treatment with sanatorium treatment plus pneumothorax in patients in categories as nearly alike as can be reasonably assessed, and proves that the probability of survival is materially increased in those so treated, even cases relegated to the worst category of Group B III at the time of induction can show a higher survival rate than a control group derived from all groups combined What is still more interesting is that the treatment is shown to confer benefits enduring for at least 12 years and presumably for a longer period

A Midhurst series (Trail 1934) followed up over a period of from 3–9 years after discharge gives 80 per cent alive, since 70 per cent of these patients were at best only comparable with Group II cases on ordinary sanatorium routine, it follows that successful pneumothorax conferred an added chance of survival of some 20 per cent up to a period, on an average 5 years from the anniversary of the date of discharge

This percentage can be very materially improved in the near future The present judgment of the treatment as to its power to improve prognosis is based, for the most part, on a type of case we now see to be primarily unsuitable If the results of the London County Council, of Frimley and Midhurst Sanatoria, of Burrell and Fenton's cases (1930) and of a series collected by the Joint Tuberculosis Council are added together, it is seen that of 257 cases fully 60 per cent were already bilateral at the time of induction Bentley's report shows that the presence of even only slight contralateral disease materially reduces the chances of survival, and that while we must aim at complete collapse of the lung in every case, even incomplete collapse in a unilateral case gives a better end result than complete collapse where bilateral disease is present.

THORACOPLASTY

If we are agreed that the indications for pneumothorax place the patient in a definitely lower category and that we must therefore read our ultimate results in this light, the same argument but in greater degree must apply to present statistics of surgical collapse We see a changing attitude to the lesser measure which will *in the next ten years* most surely again enhance our opinion of its value as we apply the lessons of our mistakes in choice and management in like fashion we must remember that the major measure has suffered in the past from the expectancy of the impossible from thoracic surgeons most of whose results to date represent the attainments of a still rapidly developing technique practised on cases submitted as last hopes by despairing physicians.

Even then the results are heartening The combined figures of Archibald and Bull in America of Gravesen in Denmark and of Franke Kaystrom and Scherdtler in Germany can claim that 42 3 per cent of 1160 patients with thoracoplasty have been able to work without signs of disease for at least a year and Sauerbruch (1936) has had 40 6 per cent permanent cures among patients derived from every social class in Germany Tudor Edwards (1928) was able to claim even eight years ago that 37 3 per cent. of his cases were alive and well and that a further 17 per cent. were much improved The importance of such an advance in therapy is perhaps better understood by comparing the results of treatment at the Vejlefjord Sanatorium (Gravesen 1932) between 1901 and 1930 in Group III positive sputum cases; only 10 per cent of 1687 cases on ordinary sanatorium routine as against 34 per cent of 170 thoracoplasties became tubercle free.

It seems only reasonable to hope that with advancing surgical technique, the provision of adequate surgical units, and the better choice of case the prognosis of the patient with advanced unilateral disease will be improved by some 50 per cent in the next 10 years The realisation of this hope must lie with the physician as on him must continue to fall the brunt of selection He has now learned from experience in his patients what animal experiments had previously demonstrated that he need not fear more ultimate functional disturbance from collapse by rib resection than from complete compression by air He has seen that there is now a method of diminishing the continual auto-intoxication from secreting cavities and a reasonable hope of their ultimate closure by the relaxation of lung parenchyma and the consequent fillip to fibrosis through congestion and limitation of lymphatic circulation which artificial pneumothorax cannot always attain He must therefore in the future be more fair to his patient and to the surgeon neither in his enthusiasm submitting the former to operation while his disease is still exudative and his mediastinum unstable nor expecting the latter to come in only when he himself has been so conservative as to hang on to an inefficient pneumothorax until resistance has been seriously undermined

Much must depend on the attitude of the physician to the treatment of cavitation. To say that he must become more surgically minded that he must admit we have proved by sad experience the fallibility of the still too prevalent dictum that an attempt at pneumothorax must necessarily precede thoracoplasty does not mean that he must submit every case to operation without the most careful and individual consideration but it does mean that he has been inclined in several cases to expect too much from sanatorium treatment or incomplete pneumothorax with consequent waste of valuable time to the patient and useless expense of public money

The prognosis of cavitation is hedged about by the most contradictory evidence West could quote many cases with such lesion established to stethoscopic examination that lived up to twenty or more years but he also says It is the acute case that recovers and the chronic comparatively quiescent case that has a sudden fatal exacerbation. If modern methods of diagnosis show that a large number of such deaths must have occurred as they still occur by miliary spread from unsuspected cavity formation they also show why in one patient we may expect quiescence in another every prospect of complete closure by rest while in still another we must use every endeavour to attain such results by surgical *treatment*

New Methods of Examination

Apart from such aids to assessment of activity and to the consequent wisdom or necessity of active *intervention* as the *history the amount and bacillary* content of the sputum the temperature and the extent and nature of the lesion to physical and X ray findings can give us we have now further guides in serial radiographic examinations and laboratory tests carried out on the peripheral blood

In 1921 Dr Arthur Latham uttered his protest on the dangers of individualisation of prognosis on the extent of lung involvement alone by saying: The extent and character of physical signs is of little assistance in determining the activity of the disease the important things are the degree of toxæmia and the response of the individual. This was no mere return to the statement of West Constitutional symptoms show if present that the disease is active and their amount forms a measure of that activity; if they are absent the disease is either stationary or progressing very slowly In the light of present knowledge such a dictum is seen to contain all the inherent fallacies of proverbs founded on half truths The problem that exercised Latham has had some answer in the last fifteen years The insidiousness of the disease and its liability to symptomless spread both before its first clinical manifestations and after its apparent quiescence, have been demonstrated by Wingfield's work on serial X rays while valuable evidence is continually accumulating on the power of the peripheral blood to indicate the individual potential resistance toxæmia and state of metabolism since the pioneer experiments of Medlar Sabin and Westergren

THE SEDIMENTATION RATE

An article published by Westergren in 1921 resuscitated an interest in the sedimentation of the red blood-cells that can be traced back to Galen who first described the crusta sanguinis that was later to become the buffy coat behind the theory of blood letting Westergren demonstrated that citrated blood when placed in a tube and left for an hour shows a layer of clear plasma above the sedimented red cells in health measuring about 2 mm high for males and about [illegible] mm for females although the limits of normality have been found to be wide his figures stand as an accepted average Later he gave the necessary impetus to a vast amount of work on the value of this sedimentation rate as an aid to assessment of individual prognosis by suggesting that it would be "interesting to test the influence of the tuberculous infection on its stability "

Most observers are agreed that the test is of little value in diagnosis, although Cutler (1932) points out that it can indicate the presence of serious disease, not infrequently before such disease can be recognised by the usual clinical and laboratory methods In 5000 patients with raised rates, he found only 5 without some definite pathological condition In 1926, 360 consecutive admissions to Midhurst Sanatorium were investigated (Trail and Stone 1929) Of these, 318 were clinically tuberculous, and 97 per cent of them gave an increased sedimentation rate, the remaining 42 were clinically non-tuberculous, but 31 *per cent gave a raised rate*, which indicates that while an acceleration may be used in conjunction with clinical findings in diagnosis, other chest conditions give a high percentage of abnormal results, while a definitely tuberculous case may give a normal figure

Much of the work has been carried out in sanatoria, and has agreed in general with Roche's summary (1932) that "The blood sedimentation-rate is of proven value in the management of cases of pulmonary tuberculosis" Clegg (1929) and Cutler (1932) believe it to be an accurate measure of the activity of the lesion, and as important as pulse, weight, and temperature It may also be an index to the necessary duration of treatment (Trail 1933) and of the necessity to change its type by forewarning us of the onset of complications such as spread of disease before their usual clinical manifestations are present Bernard (1931) considers it to be the best single test yet evolved as an aid to prognosis, and ample proof can now be provided of its value as an indication of activity, of immediate outlook, and of response to treatment, so long as readings are taken at regular intervals over a long enough period The correlation of the clinical condition on admission and discharge with the sedimentation rates taken in this fashion, in 100 consecutive positive sputum cases on routine treatment at Midhurst Sanatorium (Trail and Stone 1929) proved that if a normal for both sexes is set at a reading up to 10 per cent of clear serum in one hour, a good immediate prognosis can be given for those with figures on admission up to 20 per cent Figures of from 20 per cent to 30 per cent warranted a guarded prognosis, as patients in this category seldom attained arrest of the disease within the usual period of sanatorium treatment, while those who gave readings between 30 per cent and 40 per cent and over were usually stationary or worse at the end of that time This same observation showed that the index was superior to the usual "exercise test" on pulse and temperature and led to the following conclusions

(1) A patient with unilateral disease and a sedimentation rate beyond 20 per cent on admission not lessening with a month's absolute rest ought to be seriously considered for collapse therapy

(2) Bilateral cases with a rate above 30 per cent *similarly not improving are unlikely to* be benefited by continued routine sanatorium treatment

(3) All cases with a falling rate ought to be given a chance of further treatment, and

(4) A regularly repeated sedimentation rate is a better indication of immediate prognosis than changes in weight, and even than the presence or absence of tubercle bacilli in the sputum

This last conclusion suggested an after-history investigation and 500 cases were followed up for 2–6 years after discharge (Trail 1933) The result showed that considerable attention must be paid to the test in assessing ultimate prognosis, as in many cases it was evidently superior to the usual guides of physical signs, temperature, pulse, sputum tests, and fitness for exercise By such accepted criteria 92 of the 500 were making satisfactory progress as the result of their treatment, yet it was found that their after history was no different from that of 29 patients who were in the same categories by virtue of their blood tests, but who because of raised temperature had been kept on bed rest during the whole of their residence In both groups the ultimate prognosis became increasingly grave with the higher rates of sedimentation The final deduction was that to enter a sanatorium with a rate of *over 20 per cent and leave with one of over 10 per* cent must warrant a serious outlook, that such seriousness increases with open cases, and particularly those who remain so in spite of treatment, but that nevertheless the rule applies to every case of clinical tuberculosis whether open or closed. Of patients who left the sanatorium with a rate of over 20 per cent, fully 50 per cent of those who had remained tubercle positive were dead at the end of the period of observation, if they had become tubercle free during treatment, 25 per cent were dead, while in cases where tubercle bacilli had never been demonstrated in the sputum but who were definitely clinically tuberculous, fully 20 per cent were dead On the other hand, it appears to be better to remain positive and to secure a fall in the rate to under 10 per cent than never to have had positive sputum and leave the sanatorium with a discharge figure of over 10 per cent

THE MONOCYTE-LYMPHOCYTE RATIO AND THE VON BONSDORFF COUNT

Since the introduction of the sedimentation test, further blood examinations have been studied, particularly the monocyte and lymphocyte ratio. Many workers now believe that this ratio is a definite indication of pathogenesis in that a reciprocal fall in the lymphocytes accompanies a rise in monocytes in progressive disease, while the converse is true in the presence of healing or receding lesions, in other words, that if the absolute number of monocytes approaches that of the lymphocytes so that the comparative ratio is high, prognosis is not good. The reasoning is founded on the belief that the epithelioid and Langhan's giant cell of the tubercle are derived from the monocyte in the circulating blood, so that when phthisis is spreading the increasing monocytes in the tissues are reflected in the blood stream at the expense of the lymphocytes, while the opposite takes place when healing commences

Others have studied the von Bonsdorff count, which is a modification of the Arneth index, and consists in the enumeration of the total number of separate nuclei in the first 100 polymorphs counted, variations in the figure found represent the degree of "shift to the left" which is present

Many articles have been written showing a superiority *for each of these three blood* tests over the other two as an index to prognosis, whereas they are essentially in agreement It only requires a series of counts to be taken in the same patient over a sufficient period of time to prove that variations may occur in one not paralleled by the others. This does not mean that they are necessarily contradictory, *as* they really demonstrate *three* different aspects of the same process

Houghton (1935) has done a considerable amount of work on these lines, and believes that the monocyte lymphocyte ratio and the von Bonsdorff count taken together can show pathological changes earlier than the sedimentation rate He has sufficient proof to formulate the theory that the differential count indicates potential resistance to the disease, while the sedimentation rate and the von Bonsdorff count reflect the condition which is the result of the lesion the former measuring the amount of constitutional disturbance and consequent state of metabolism and the latter the toxæmia which is the result of the activity Further he has found it possible to combine all these tests and to reduce them to a common denominator which he calls a hæmogram, and which can serve not only as a basis of convenient comparison between cases but also as a fairly accurate sliding-scale of the pathological status of the patient at any given point in his treatment

Such work gives great hope that in the near future a further research into the use of these combined tests will solve many problems on the indications for treatment and the opportune moment for their employment which still confront the physician As they already provide an explanation for the longevity of the patient who has gross extent of disease and for the breakdown within a short period of others who had apparently reached quiescence as judged by other standards so they give us great assistance in assessing the true pathological status of those still under treatment We can now prognose that the type of case which is likely to improve most rapidly in its blood picture by the application of collapse therapy is one where there is severe toxæmia as evidenced by a low von Bonsdorff count but a good potential resistance and power of fibrosis in a high lymphocyte percentage while the metabolism and general condition are shown to be able to stand active intervention as there is a low sedimentation rate.

In the same way changes in the blood picture produced by minor measures warrant a forecast of the probable result of major measures where an improved von Bonsdorff count and a higher lymphocyte percentage have been attained by phrenic evulsion still further improvement may be expected from thoracoplasty On the other hand if deterioration in these tests is shown during the re expansion of a pneumothorax it is evidence of the continued activity of the disease and of the necessity of recompression of the lung It also follows that their use can be very properly extended to the field of after care.

After care

We have already seen that the most dangerous year for the sanatorium treated patient is that following his discharge There is no guarantee that the same insidiousness will not characterise a re exacerbation as all too commonly precedes the earliest clinical manifestation of an already established lesion and present methods of diagnosis of both conditions too often fail to reveal their presence before the extent of involvement is so great that the patient is past the stage of possible arrest from collapse therapy

Not the least of the advantages to the case of artificial pneumothorax lies in the continual and expert supervision which he automatically receives for a period of some three years following the induction Frequent screening and film examinations discover complications or fresh foci before the patient is aware of their presence so that prompt treatment is undertaken The pronounced effect on ultimate prognosis needs no comment except in so far as it brings a lesson which we have been slow to learn in that our after-care schemes in general are withholding from all other ex patients the benefits conferred on the few fortunate enough to receive active treatment. Until such benefits are universally provided we must continue with the present results of sanatorium treatment that have shown little alteration since the beginning of this century

Early Diagnosis

What is true of after care is true of diagnosis Of all pulmonary cases treated by the London County Council during 1921 only 35·4 per cent. were diagnosed *before the disease had progressed beyond the* early stages a review for the years 1927–31 inclusive shows this proportion to remain practically steady If this instructive though unpleasant statement is taken in conjunction with the fact that phthisis shows no real improvement in incidence or death rate over the last thirty years in adolescents and young adults between the ages of 15 and 35 it must follow that the hope for the future lies in diagnosis at a preclinical stage.

From the study of the histories of sanatorium patients it is evident that it is not yet generally realised that a pleural effusion is in most cases an infection of the lung periphery by contiguity and extension Bowditch found that of 90 cases, 32 died of phthisis and Allard and Koster that of 2123 patients with established lesions 30 per cent had a history of previous pleurisy The records of Midhurst Sanatorium between 1924 and 1933 show an interesting point of all patients admitted during that period with definite pulmonary diseases no less than 26·6 per cent had a history of pleurisy three to four years before admission but of 61 admitted for pleurisy only 3 that is, 5 per cent have since developed any further signs or symptoms of tuberculosis. This is upheld by the findings of Gaarde (1930) who reports that of 68 cases of pleural effusion who had at least four months rest 43 recovered completely but that of 17 with less than two months rest 11 were dead within the same period of observation

RADIOGRAPHY

The same arguments apply to many cases of hæmoptysis of long-standing indigestion amenor*rhœa and fistula in ano for if all such* were submitted to screen and film examination by a competent chest radiologist, a large proportion would be found to have latent or even active disease often established to an alarming extent. That it is already present though unsuspected, and can be diagnosed in the symptomless stage has been demonstrated by the intensive work of Fellowes (1934) Hetherington McPhedran Landis and Opie (1929) Their combined results show a percentage of latent disease of fully 1 per cent in adolescents and of 3·6 per cent *at older ages in the apparently healthy Hetherington* discovered 1 per cent of such foci in adolescent children and a research at Philadelphia University (1931) showed amongst medical students a continuous increase in incidence in successive years of study of from 4 per cent in the first year to as much as 21 per cent in the fourth year In this country Wingfield and McPherson (1930) studied 2381 adolescents between the ages of 14 and 21 all of whom were apparently in normal health, and found a positive result in 0·65 per cent which was increased to 1·08 per cent, when they included abnormal film that could not be explained on any other basis These facts demonstrate that we have at hand a method of early diagnosis that can completely alter the prognosis of pulmonary tuberculosis At present we are spending enormous amounts of money in attempts to patch up those already seriously damaged by a condition which might have been discovered while it was still latent, and on the disasters of relapse and reactivity that present themselves in fully 50 per cent of treated cases within three years of reaching apparent quiescence It is almost certain that the expense of the tuberculosis services would be definitely reduced within a period of twenty years if we now began detecting by routine radiography latent disease in adolescents and young adults, what is far more important is that we should certainly have an enormous effect on the prognosis of phthisis, and not only save life, but also alleviate the continuing amount of worry and distress from the ravages of this disease, at the age when we find a sustained morbidity and mortality in spite of all other methods of diagnosis at present employed

Conclusions

We can now sum up the present position in the light of work done in the past twenty years, and, profiting as much by our failures as by our successes, visualise such application of recent work on earlier diagnosis, the employment of special treatments, and the value of after care as ought to brighten prognosis very materially in the near future

The benefits which routine sanatorium treatment can confer are now established by a comparison of the fate of its ex patients with that of the tuberculous in the general population The expectation of survival for five years in those so treated can be stated in accordance with their groupings on extent of disease at admission as 80 per cent in Group I, 66 per cent in Group II, and 35 per cent in Group III We know from statistics of end results of pneumothorax treatment that such expectation of life has been improved by some 20 per cent in Group II and Group III cases combined, even though fully 60 per cent of the recipients were not unilateral cases at the time of induction, and that 40 per cent of its failures have been given an equal added chance by thoracoplasty despite the fact that this measure has been judged by still harsher standards of selection Both these methods of active intervention have shown their power to improve on the expected value of routine sanatorium treatment in unilateral cases, which by their very selection were relegated to a category of graver outlook as against their fellow patients of evidently similar extent of lung involvement

From laboratory tests on peripheral blood we are now able to assess individual resistance, powers of recovery, and toxæmia, to choose the case that is likely to improve on routine treatment and to forecast its length, to select our cases for special treatments, and to state with more exactitude than we could ten years ago immediate and ultimate prognosis In addition they have shown us why results of sanatorium treatment are practically parallel in many patients of entirely different social standard and therefore of presumably different categories for after care

We have yet to apply several lessons of these advances In view of the static results in routine treatment over the past thirty years, we must aim at conferring on all our patients the benefits of the after-care that have been the foundation of the successes of active treatment in automatic expert supervision including serial radiography and blood tests, we must become more surgically minded i pulmonary tuberculosis as we have already becom more medically minded in surgical tuberculosis, an if we are to have any effect on the unchanging and ver gloomy picture of morbidity and mortality in adole cent and early adult life, we must employ X ra diagnosis, or at least institute further research i its value in the discovery of the disease while it still latent and symptomless

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THE IMMUNISING POTENCY OF ANTIGENIC COMPONENTS ISOLATED FROM DIFFERENT STRAINS OF *BACT TYPHOSUM*

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In an earlier series of papers (Raistrick and Topl 1934, Delafield 1934, Martin 1934) we and o colleagues reported the isolation from *Bacter typhi murium* (*Bact aertrycke*) of a fraction whi on injection into mice, induces an active antibacter immunity of the same order as that induced by th whole bacterial cells This fraction is toxic for and for rabbits In addition to increasing t resistance of mice to living virulent bacilli, its injec in minute amounts, renders them resistant to a f minimal lethal doses of the toxic fraction it An antitoxic immunity of this low order has be recorded by many workers who have studied t reactions of the so called bacterial endotoxins is sharply differentiated from the high grade an toxic immunity that is readily developed again the so called exotoxins, such as those of *Cory bacterium diphtheriæ* and *Cl tetani*, in which animal may be rendered resistant to a thousand or more minimal lethal doses. Chemically this toxic and antigenic component consists of a complex polysaccharide linked to a component containing nitrogen phosphorus sulphur and fatty acids which is perhaps, a phosphatide

Boivin and his colleagues (1933 1934 1935 1936) were independently approaching the same problem by a different method at about the same time as ourselves and their initial results were published some months before our own. Subsequent studies have made it clear that the component which we have isolated by acetone treatment of the bacterial bodies followed by tryptic digestion and alcohol precipitation is identical in all its essential properties with the component isolated by them by extraction with trichloracetic acid followed by alcohol precipitation Both their studies and our own leave little doubt that this component represents the polysaccharide somatic antigen of the normal smooth form of *Bact typhi murium* in its naturally occurring state and at the same time constitutes the main endotoxin When the complex antigen is heated at 100 C with decinormal acetic acid it splits into the polysaccharide component which remains in solution, and the phosphatide component which is precipitated. The polysaccharide component is entirely non toxic for mice The phosphatide component retains some toxicity but is much less toxic than the complete antigen

Antigenic components of the same general type may as Boivin and his colleagues (1933) have shown be isolated from a variety of organisms including the members of the typhoid paratyphoid group With the exception of the antigen of *Bact typhi murium* (*Bact aertrycke*) and of *Bact enteritidis* (*Bact gaertneri*) none of these components have yet been subjected to any detailed study

The recent investigations of Felix and his colleagues (Felix and Pitt 1934a and b 1935 Felix Bhatnagar and Pitt 1934 Felix and Bhatnagar 1935) on the so called Vi antigen of *Bact typhosum* and the studies of Perry Findlay and Bensted (1933 1934) on the efficacy of various typhoid strains as immunising agents in mice have raised problems which seemed susceptible to attack along the lines we had followed in our studies on *Bact typhi murium* and the practical importance of obtaining a reliable immunising agent as a prophylactic against human typhoid made it desirable that this possibility should be explored.

The present position in regard to immunisation with whole bacterial cells may be briefly summarised as follows Felix and his colleagues have shown that certain smooth strains of *Bact typhosum* are differentiated from many of the ordinary laboratory strains by being very slightly agglutinable in antisera containing agglutinins to the somatic (O) antigen These O inagglutinable strains are relatively virulent for mice while the ordinary O agglutinable strains are relatively avirulent The O inagglutinability of the mouse virulent strains is determined by the presence of an additional antigenic component—Felix s Vi antigen This component is relatively heat labile and Vi strains subjected to temperatures much over 60 C become freely agglutinable with an O antiserum When Vi bacilli killed in various ways are injected into mice they induce an effective active immunity against the subsequent injection of living Vi bacilli Killed vaccines prepared from smooth O strains however have been found by the workers referred to above to be entirely or relatively ineffective in inducing an active immunity In this case therefore it is not sufficient to use a smooth strain containing the ordinary heat-stable smooth somatic antigen The Vi antigen must also be present. There are certain reported findings which are at the moment not easy to reconcile with one another Thus, living Vi bacilli injected into the rabbit lead to the production of Vi agglutinins which act specifically on the Vi antigen as well as of O agglutinins Such antisera promote phagocytosis of Vi bacilli in vitro and exert a protective action against them in vivo The injection of formol killed Vi cultures into rabbits induces the formation of Vi agglutinins but the antisera so prepared have been found to lack protective power in vivo and phagocytosis promoting activity in vitro The injection into rabbits of Vi bacilli killed by heating at 58 C has failed to stimulate the production of Vi agglutinins except to a trivial degree and inconstantly and such antisera have been found to have no protective power It has however been the experience of Felix himself (see Felix and Pitt 1934b) of Perry Findlay and Bensted and of other workers (see Schütze 1936) that Vi bacilli killed in a variety of ways including killing by formol and by exposure to moderately high temperatures are fully effective in the induction in mice of an active immunity to living Vi bacilli It may be noted that doubts have been raised as to whether the Vi antigen can properly be regarded as determining virulence in the usually accepted sense (see Kauffmann 1935–36 1936 Ørskov and Kauffmann 1936) There is general agreement that the minimal lethal dose for mice of living Vi bacilli is much smaller than the *minimal lethal dose of O bacilli from which the* Vi antigen is absent (50–200 million as compared with 1000 to 2000 million); but the M.L.D of the Vi strains remains relatively high and almost certainly induces some degree of directly toxic effect. It should also be noted that strains intermediate between the pure Vi form and the pure O form are very frequent, and that the recorded results suggest that the immunising efficacy of any given strain is directly related to its content in Vi antigen

Experimental

The strains used in these experiments have been a rejuvenated Rawlings strain (R R) for which we are indebted to Major General Marrian Perry of the Royal Army Medical College and the well known H901 strain The R.R strain is inagglutinable by an O antiserum when tested in the form of a young living broth culture at 37 C (see Craigie and Brandon 1936) The 901 strain is readily agglutinable The minimal (average) lethal dose of the R R strain for mice weighing 18 22 g the bacilli being injected intraperitoneally is rather less than 100 million bacilli. The corresponding dose of the 901 strain is rather more than 1000 million bacilli. The R R strain is therefore of the Vi type the 901 strain of the O type or more strictly the H–O type

From each of these strains we have prepared a purified antigen by the same methods as we employed in our studies on *Bact typhi murium* Full detail of these methods and of the chemical properties of the antigens isolated will be published elsewhere For the moment it will suffice to note that the typhoid bacilli are killed by treatment with acetone and then submitted to full tryptic digestion The digest after clearing by centrifugation is submitted to alcohol precipitation The antigenically active fraction is flocculated by 68 per cent alcohol and for this reason, we have provisionally labelled it F68 This fraction is further purified by repeated alcoholic precipitation, and is then treated with oxalic acid which removes an appreciable amount of calcium which is present The antigen is further purified by several alcoholic precipitations from acid and neutral solutions It is with these components (R R /F68 and 901/F68) that the following experiments have been performed The yields of purified antigen obtained from the R R and 901 strains of *Bact typhosum* and from *Bact typhi murium* were in each case from 15–20 per cent of the weight of the dry bodies

Reverting for the moment to the tentative conclusion of Ørskov and Kauffmann, that the relatively high pathogenicity of Vi strains depends on toxicity rather than on virulence, we may note that the F68 antigen from the Vi (R R) strain has not, in our hands, proved more toxic than the F68 antigen from the O (901) strain Indeed, in the few comparative tests we have made, the reverse has been the case

THE IMMUNISING POTENCY OF R R /F68

The first experiment was designed to test whether an F68 fraction isolated from a Vi strain of *Bact typhosum* would induce an active immunity of the same order as that induced by the whole bacterial cells

The general plan of this experiment, and of those recorded later, has been the same as that followed in all our earlier studies A number of mice sufficient to allow for a few deaths during immunisation have been injected with two or more doses of the fraction, or fractions, under study, the injections being given at weekly intervals One week after the last immunising dose, the mice, in batches of 30, have been injected intraperitoneally with living Vi bacilli (strain R R) in a dose of 500 million At the same time we have tested numerically equal batches of non immunised controls The standard dose of purified antigen has been 0 017 mg The dose of bacterial cells, killed by the addition of 0 25 per cent formol and heating at 55° C for 1 hour, has been 500 million

In this experiment three immunising injections were given intraperitoneally Two groups of mice immunised with each reagent were tested, and two groups of controls All mice were observed for 7 days after receiving the test dose of living bacilli though deaths very rarely occurred after the third day

The results of this experiment are summarised in Table I, and need little comment Both the whole bacterial cells, and the purified antigen derived from them induce an effective immunity to living Vi bacilli The differences between the immunised and and non immunised groups are well beyond the limits required for statistical significance There is no significant difference between the degree of immunity induced by the purified antigen and by the whole bacteria

TABLE I

Showing the relative immunising potency of killed bacterial cells from a Vi strain of Bact typhosum *(R R) and of a purified F68 antigen from the same strain*

Group No	Immunising agent	No of mice in group	No of mice dying
1	Whole bacteria	30	1
2	Whole bacteria	30	1
3	F68	30	3
4	F68	30	0
5	Nil (controls)	30	23
6	Nil (controls)	30	25

THE RELATIVE IMMUNISING POTENCY OF THE VI (R R) AND O (901) ANTIGENS

In regard to the immunising potency of whole bacterial cells from the Vi (R R) and 901 strains, and of the purified antigens derived from them, our results are not in entire accord with the general conclusions of Felix and his colleagues, since we have found the 901 strain, and the purified antigen derived from it, to possess a significant degree of immunising potency They are, however, in accord with the actual experimental results reported by Felix and Pitt (1934b), and with the important conclusion of Felix and his colleagues, of Perry, Findlay and Bensted, and of other workers, that Vi strains of *Bact typhosum* are much more effective in inducing an active immunity in mice than are mouse avirulent strains, from which the Vi antigen is absent The degree of difference observed seems to depend on the route by which the immunising injections are given, and on the number of doses administered

In all the following experiments a uniform dose of 0 017 mg of the antigen under test has been employed, or of 500 × 10^6 bacilli killed by formol and heat. The immunising injections have been given at weekly intervals, and a test dose of 500 × 10^6 living Vi (R R) bacilli has been given one week after the last immunising dose The results may conveniently be summarised in tabular form (Tables II III and IV).

(*a*) *Two immunising doses given subcutaneously*—The results are shown in Table II Under these conditions the killed Vi (R R) bacteria, and the F68 antigen derived from them, induce an effective immunity The O (901) bacteria, and the F68 antigen derived from them, are quite ineffective These findings, so far as the relative potency of the whole bacterial cells is concerned, confirm those reported by Felix and Pitt (1934b) The purified antigen derived from the R R strain appears to be slightly less effective than the whole bacterial cells , but the observed difference is not statistically significant

TABLE II

Showing the immunising potency of whole bacilli and F68 antigens from a Vi strain (R R) and an O strain (901) when two subcutaneous immunising doses were employed.

Group No	Immunising agent	No of mice in group	No of mice dying
1	R R whole bacteria	30	1
2	901 whole bacteria	30	9
3	R R /F68	30	5
4	901/F68	30	25
5	Nil (controls)	30	2

TABLE III

Showing the immunising potency of whole bacilli and F68 antigens from a Vi strain (R R) and an O strain (901) when two intraperitoneal doses were employed

Group No	Immunising agent	No of mice in group	No of mice dying
1	R R whole bacteria	30	0
2	901 whole bacteria	30	16
3	R R /F68	30	[illegible]
4	901/F68	30	15
5	Nil (controls)	30	2

(*b*) *Two immunising doses given intraperitoneally*—The results are summarised in Table III The whole

R R bacteria, and the purified antigen derived from them again induce a highly effective active immunity; but when two immunising doses are given intraperitoneally instead of subcutaneously the 901 bacteria, and the purified antigen derived from them are by no means without effect The difference between the numbers of mice dying in the control group and in the group immunised with 901 bacilli is 11 and the standard error of this difference is 3 40 giving a ratio of 3 15 : 1 and hence amply fulfilling the criterion of statistical significance. The corresponding difference for the control and 901/F68 groups is 12 and the Difference/S E ratio is 3 38 1

There is no evidence of any difference in immunising potency between the whole bacteria and the purified antigens derived from them

(c) *Three immunising injections given intraperitoneally* —The results are summarised in Table IV Under these conditions the whole 901 bacilli and the purified antigen derived from them induce an immunity against living Vi bacilli of approximately the same order as that induced by the R R bacilli or by the R R antigen. In each case the immunity induced by the purified antigen is slightly but insignificantly less than that induced by the killed bacterial cells.

TABLE IV

Showing the immunising potency of whole bacilli and F68 antigens from a Vi strain (R R) and an O strain (901) when three intraperitoneal injections were employed

Group No	Immunising agent.	No of mice in group	No of mice dying
1	R R whole bacteria	30	0
2	R R. whole bacteria	30	0
3	901 whole bacteria	30	1
4	901 whole bacteria	30	2
5	R R /F68	30	1
6	R R /F68	30	0
7	901/F68	30	3
8	901/F68	30	5
9	Nil (controls)	30	27
10	Nil (controls)	30	8

THE PROTECTIVE PROPERTIES OF R R./F68 AND 901/F68 ANTISERA

The results obtained with these antisera were somewhat surprising Rabbits were injected with the fractions in question receiving 0 1 mg 0 2 mg 0 5 mg and 0 5 mg per kg body weight of one or other antigen weekly doses being given intravenously One week after the fourth immunising injection the rabbits were bled and their sera examined They showed O agglutinin titres for *Bact typhosum* varying from 1 : 640 to 1 : 1280 Most of them failed to agglutinate Vi suspensions of *Bact typhosum* or agglutinated them only to very low titre (1 10) and incompletely The serum of one rabbit that had been immunised with R R /F68 however gave complete agglutination of a Vi suspension at 1 80 and a trace at 1 160 Judging from the experience of Felix Bhatnagar and Pitt (1934) this titre is definitely above the limit of normal Vi agglutinins and it would seem that we must regard the rabbit in question as having produced Vi antibody in response to the injection of the F68 antigen derived from the Vi (R R) strain This serum and the serum of a rabbit immunised with the 901 antigen which showed incomplete agglutination with Vi bacilli at a titre of 1 : 10 were tested for their protective action in mice 30 mice were given a subcutaneous injection of 0 25 c cm of the anti R R /F68 serum 30 were given a similar dose of the anti 901/F68 antiserum and 30 an injection of normal rabbit serum. Next day these 90 mice, and 30 normal mice that had received no serum were injected intraperitoneally with 500 × 10^6 living R R bacilli.

The results are shown in Table V Both antisera exerted a very definite protective action The normal rabbit serum exerted none The anti 901/F68 serum appears to be slightly less effective than the anti R R /F68 antiserum but the difference is not significant

TABLE V

Showing the protective action against living Vi bacilli of rabbit antisera prepared against R R F68 and 901/F68

No of group	Serum	No of mice in group	No of mice dying
1	Anti R R /F68	30	4
2	Anti 901/F68	30	8
3	Normal serum (control)	30	27
4	No serum (control)	30	[illegible]

THE CHEMICAL PROPERTIES OF THE R.R /F68 AND 901/F68 ANTIGENS

It has been shown above that both the R R /F68 antigen and the 901/F68 antigen have a definite immunising effect but that the R R /F68 antigen is significantly more potent When mice are immunised by two subcutaneous doses of 0·017 mg the R R /F68 antigen remains fully effective while the 901/F68 antigen is quite ineffective It is of obvious interest to inquire whether this difference in immunising efficiency is associated with any detectable difference in chemical behaviour or structure The chemical analysis of these antigenic components is as yet in its earliest stages; but it is already clear that the chemical properties of R R /F68 differ significantly from those of 901/F68 and of the F68 fraction from *Bact typhi murium*

All three antigens are fine white powders which on dispersion in water give rise to opalescent solutions All contain nitrogen (R R./F68 5 2 5 3 4 8 per cent in three different preparations 901/F68 4 9 5 1 per cent *Bact typhi murium* F68 4 3 4 8 4 2 per cent) and all contain ash (R.R /F68 2 5 per cent. ; 901/F68 4·0 per cent ; *Bact typhi murium* F68 4 3 per cent)

0 4 per cent aqueous solution of the three antigens give the following reactions —

(a) All of them give a heavy white precipitate with basic lead acetate

(b) *None of them gives a precipitate with any of the* following reagents sulphosalicylic acid trichloracetic acid Esbach's reagent magnesia mixture silver nitrate the sulphates of nickel cobalt and cadmium and the chlorides of barium and mercury (mercuric)

(c) Precipitates are given by R R./F68 but not by either 901/F68 or *Bact typhi murium* F68 with the following reagents: phosphotungstic acid in [illegible] per cent H_2SO_4 neutral lead acetate uranium acetate mercuric acetate and aluminium sulphate

(d) All three antigens give positive Millon *Biuret* Ninhydrin and Molisch reactions but none of them reduce Fehling's solution

It is obvious from a consideration of the above results that while the 901/F68 antigen and the *Bact typhi murium* F68 antigen are indistinguishable by the chemical tests referred to above the R R /F68 antigen differs in many important chemical respects from the other two The difference is also clearly shown by the behaviour of the three antigens on mild hydrolysis Thus on heating 1 per cent solutions in N/10 aqueous acetic acid at 100° C the three opalescent solutions quickly become more opalescent With *Bact typhi murium*/F68 and 901/F68 a precipitate quickly begins to form after five minutes in the first case and after ten minutes in the second, complete flocculation occurring within thirty to ninety minutes with the formation of a clear supernatant liquid of constant optical rotation, and the separation of a white flocculent precipitate With R R /F68, however, no obvious flocculation occurs even after heating the acetic acid solution for 12 hours From each of the three hydrolysis solutions a mixture of polysaccharides is obtained by precipitation with ethyl alcohol, and each of these mixtures contains as one of its constituents a highly dextro rotatory polysaccharide

Discussion

These observations, taken as a whole, offer certain suggestions in regard to the possible nature of the Vi antigen, and the factors that determine its immunological behaviour

It has been found that —

(*a*) The whole bacterial cells from a Vi strain of *Bact typhosum*, killed by the addition of formol and heating at 55° C, are a more effective immunising agent in the mouse than the whole bacterial cells derived from an O strain This difference is relative, not absolute It is most evident when the immunising injections are given by the subcutaneous route, and when they are not more than two in number When three injections are given intraperitoneally, the killed O bacilli induce an immunity of the same order as that induced by the killed Vi bacilli

(*b*) These results are exactly paralleled by purified antigens of the F68 type isolated from the Vi and from the O strain Our own experience and that of other workers make it extremely probable that these components represent the complex polysaccharide somatic antigens of typhoid or paratyphoid bacilli in their naturally occurring state

(*c*) Preliminary chemical studies have shown that the F68 antigen isolated from a Vi strain differs in certain of its chemical characters from the F68 antigen isolated from an O strain

These findings seem to admit of only two hypotheses Either the Vi antigen is a modified O antigen, or the Vi antigen, though a separate chemical entity, has chemical properties so similar to those of the O antigen that it remains associated with it throughout a long series of chemical fractionations Of these hypotheses, the first seems inherently the more probable It would be in no way surprising if the smooth somatic antigen of the typhoid bacillus developed, under certain conditions, relatively labile groupings of an immunologically active kind There is an obvious analogy in the acetyl polysaccharide of the Type I pneumococcus described by Avery and Goebel (1933) When fully developed these groupings might dominate the surface of the bacterial cells, so that these become irresponsive to the O agglutinins If the Vi groupings were partially developed the cells might be flocculable by both Vi and O agglutinins as we know the intermediate strains to be When the Vi groupings were very poorly developed or altogether absent the cells might be agglutinable only by an O antiserum The results that we have obtained with the O (901) strain clearly suggest the possibility that, even in this strain, the Vi groupings are not altogether absent

It would seem to us that this might be adopted as a tentative working hypothesis were it not difficult to reconcile with certain recent findings of Felix and Pitt (1935) These workers have described the isolation of a rough avirulent variant of a particular Vi strain of *Bact typhosum* which appears to have retained the Vi antigen while losing the smooth somatic antigen of the O type Of four rough variants of Vi strains described by these workers, two had lost both the O and Vi antigens, one had retained a proportion of both, and one had retained the Vi but had lost the O To fit these findings into the working hypothesis suggested above it would be necessary to assume that, in this particular variant, the Vi groupings had become relatively stable, or, in some other way, had come so to dominate the behaviour of the O Vi complex that the O groupings no longer exerted a significant effect, or, alternatively to assume that the complex polysaccharide antigen that is present in rough variants shares with the smooth O antigen the capacity for developing Vi groupings This problem clearly demands further study, but, at the moment, we feel that these observations by Felix and Pitt must be regarded as rendering less probable the working hypothesis that we should have been inclined to adopt on the basis of our own results

Finally, it appears possible to isolate from suitable strains of *Bact typhosum* a chemically pure and stable antigen that has the immunising properties of the whole bacterial cells

These studies, and others in the same general field, are, of necessity, extremely expensive They involve the growth of relatively enormous masses of pathogenic bacteria, laborious and large-scale chemical manipulations, and the annual expenditure of many thousands of money in the immunological assay of the various chemical fractions isolated They have been rendered possible by grants received from many different sources from the Leverhulme Trust, the Pilgrim Trust, Imperial Chemical Industries, and from a fund raised by Sir Austen Chamberlain, to which many generous private donors have contributed To all these we would express our thanks One of us (J W) is receiving a research grant from the Medical Research Council, one (S W C) is holding a Grocers research scholarship, and one (M S), while collaborating in this work, was holding a Beit memorial fellowship

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WALSALL HEALTH SERVICES —A new infant welfare centre which cost £2600 to build, has been opened in Pool street Walsall In July a municipal midwifery service is to be established, and fourteen midwives will be appointed to the staff of the health department

THE IMMUNISING ACTIVITY OF CERTAIN CHEMICAL FRACTIONS ISOLATED FROM HÆMOLYTIC STREPTOCOCCI

BY T C STAMP
AND
E B HENDRY

(From the London School of Hygiene and Tropical Medicine)

SEVERAL attempts have recently been made by different workers to isolate immunologically active fractions from hæmolytic streptococci. Lancefield (1928 1933 1934) has shown that three or more distinct components may be extracted from the bacterial cells by means of HCl at a temperature of 100° C These substances were found to differ in their chemical nature and in their distribution among hæmolytic streptococci from different sources One of these components was shown to be a protein specific for each antigenic type as determined by agglutination and cross-protection tests In some strains the type-specific substance that was isolated proved to be a polysaccharide Another component isolated was found to be shared by a number of different types forming definite groups of hæmolytic streptococci. These group-specific substances had the properties of complex polysaccharides A third component described as a nucleoprotein was shown to be less specific the same antigenic substance being found in streptococci from widely different sources None of these fractions appeared to be fully antigenic though all were found to react in vitro to form characteristic precipitates with suitable antisera Fractions capable of producing antibodies when inoculated into animals have however been isolated by other methods Lancefield was able to isolate a non-specific nucleoprotein substance by extraction of the bacterial cells with saline in the cold. This was found to give rise to antibodies reacting with similar fractions from a wide variety of strains

Heidelberger and Kendall (1931 1936) have isolated by extraction with phosphate buffer solutions of different pH various protein fractions some of which were found to give rise to type and group specific antibodies Up to the present however no fractions isolated have been shown to be capable of inducing active immunity when inoculated into animals The object of the present work has been to investigate the possibility of isolating immunising fractions of this type from different strains of hæmolytic streptococci, with a view to studying their chemical composition

Experimental

Fractions have been isolated from the dried or fresh living bacterial cells in various ways and tested for immunising potency by methods similar to those followed by Raistrick and Topley (1934) Groups of mice have been immunised with a standard preparation of dried bacterial cells and with different fractions to be tested over a period of three weeks The following method of immunisation has been found to give a satisfactory degree of immunity when the standard preparation was employed and has been adopted as a routine for all fractions During the first week each mouse received three doses of 0 1 mg of the fraction to be tested given intraperitoneally on three successive days followed by four days rest During the second week each dose was raised to 0 2 mg and to 0 3 mg during the third week Each animal received a total of 1 8 mg Seven days after the last immunising dose the groups of mice were tested for resistance to infection with the homologous strain the dose of washed living organisms administered intraperitoneally being sufficient to kill all non immunised control animals included in each test The mice have been kept under observation for 28 days and the potency of each fraction has been compared with that of the standard preparation by a comparison of the percentage of survivors in each group

THE FRACTIONATION OF A GROUP C STRAIN

Strain S34 has been used throughout the earlier part of the work for the preparation of fractions It had been isolated from bovine mastitis by Stableforth and was found to fall into Group C by Lancefield's group precipitin reaction resembling the animal strains of that group in fermenting sorbitol and not trehalose It has been found to be moderately virulent for mice having an average lethal dose of 10 000 organisms as estimated by colony counts The infecting dose employed has been about 100 average lethal doses or approximately one million organisms The material for fractionation has been prepared by growing the strain for 24 hours at 37 C in Hartley broth to which 0 5 per cent of glucose had been added centrifuging the deposit of growth and washing in distilled water In preparing the standard dried bacterial cells the washed living cells have been partially extracted with acetone at 37 C to kill, washed with alcohol and ether and dried off in vacuo over concentrated sulphuric acid This preparation has been found to be entirely non

TABLE I

Method of Isolation of HCl-soluble and NH_4OH-soluble Fractions of Strain S34 (Group C)

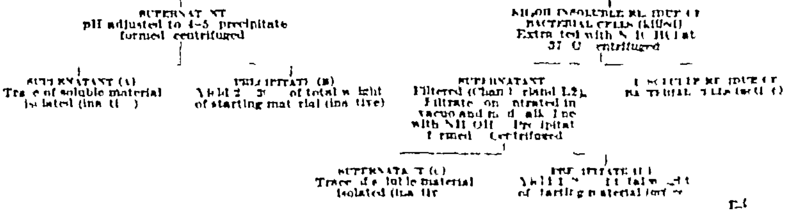
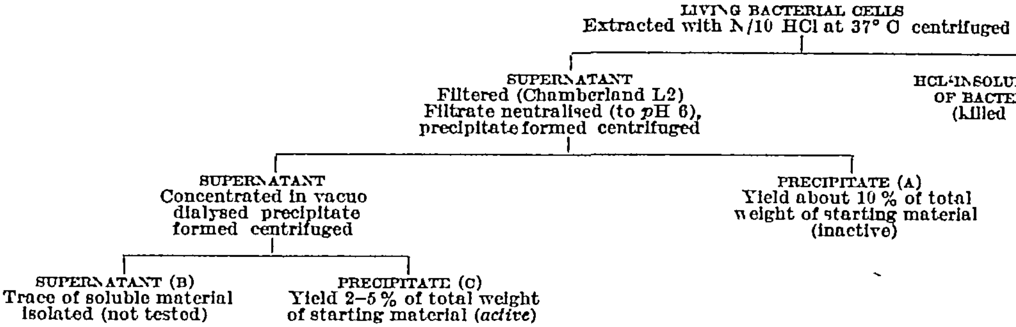

LIVING BACTERIAL CELLS
Extracted with N/10 NH4OH at 37° C centrifuged
SUPERNATANT
pH adjusted to 4-5 precipitate formed centrifuged
NH4OH INSOLUBLE RESIDUE OF BACTERIAL CELLS (killed)
Extracted with N/10 HCl at 37° C centrifuged
SUPERNATANT (A)
Trace of soluble material isolated (inactive)
PRECIPITATE (B)
Yield 2-3% of total weight of starting material (inactive)
SUPERNATANT
Filtered (Chamberland L2), Filtrate concentrated in vacuo and made alkaline with NH4OH Precipitate formed Centrifuged
INSOLUBLE RESIDUE OF BACTERIAL CELLS (killed)
SUPERNATANT (C)
Trace of soluble material isolated (inactive)
PRECIPITATE (D)
Yield [illegible] of total weight of starting material (active)

TABLE II

Method of Isolation of HCl-soluble Fractions of Strain "Richards" (Group A)


LIVING BACTERIAL CELLS
Extracted with N/10 HCl at 37° C centrifuged
SUPERNATANT
Filtered (Chamberland L2)
Filtrate neutralised (to pH 6),
precipitate formed centrifuged
HCL-INSOLUBLE RESIDUE OF BACTERIAL CELLS
(killed active)
SUPERNATANT
Concentrated in vacuo
dialysed precipitate
formed centrifuged
PRECIPITATE (A)
Yield about 10 % of total
weight of starting material
(inactive)
SUPERNATANT (B)
Trace of soluble material
isolated (not tested)
PRECIPITATE (C)
Yield 2–5 % of total weight
of starting material (active)

toxic for mice even when large doses were employed It was at first used as the starting material for the preparation of fractions, but later it was found that the fresh washed undried cells were more suitable for fractionation Attempts were at first made to isolate immunising fractions by methods similar to those employed by Raistrick and Topley in the case of *Bact aertrycke* (1934) It was found, however, that digestion with trypsin completely inactivated the standard preparation This method therefore had to be abandoned and an attempt was made to isolate an active fraction by extraction with dilute acids and alkalis The methods which have been employed are outlined in Table I It will be seen that the freshly grown bacterial cells of strain "S34" have first been extracted with N/10 NH_4OH at 37° C until no more NH_4OH-soluble material was removed The extract has then been centrifuged at high speed to get rid of all bacterial debris and the great bulk of the NH_4OH soluble material has been found to be precipitated on adjusting the reaction to between pH 4–5 This precipitate, called Fraction B, has been washed in absolute alcohol and ether, and dried off in vacuo over concentrated sulphuric acid The NH_4OH insoluble residue of bacterial cells has then been extracted completely with N/10 HCl at 37° C The acid extract after being passed through a bacterial filter (Chamberland L2) has been made alkaline with NH_4OH A white precipitate formed which was removed by centrifuging, washed and dried off as before This HCl-soluble NH_4OH-insoluble material called Fraction D, has been tested together with the NH_4OH-soluble Fraction B The results of immunisation with these two fractions are shown in Fig 1

It will be seen that the HCl-soluble NH_4OH-insoluble fraction showing 17 survivors out of 25, or 68 per cent after twenty eight days, has induced a degree of immunity equal to that produced by the standard preparation with 15 out of 25 survivors, or 60 per cent

The NH_4OH soluble Fraction B however, has proved completely inactive all 25 mice immunised with this fraction dying within forty eight hours The non immunised control mice were also all killed within a few days Further batches of the HCl soluble NH_4OH-insoluble fraction have been prepared and on testing have shown a similar degree of immunising activity It was found that the active acid-soluble material might also be isolated from the HCl extract by dialysis—the fraction settling out as a bulky precipitate within twelve hours Fractions prepared by this method did not appear as pure as those obtained by ammonia precipitation, which have the following properties The active fraction appears to be protein in nature, giving positive biuret and ninhydrin reactions It contains arginine, tyrosine, and tryptophane and is completely inactivated by tryptic digestion The Molisch reaction for sugars is negative, but after hydrolysis a small amount (about 6 per cent) of reducing substance calculated as glucose, can be detected The fraction is insoluble in distilled water and ammonia, but dissolves readily in acid to give a water clear solution. It is precipitated by one third saturation with ammonium sulphate It is not coagulated by boiling in very dilute acid The rotation and total nitrogen content are fairly constant in different batches of the fraction, and neither value was found to change during repeated reprecipitation by ammonia

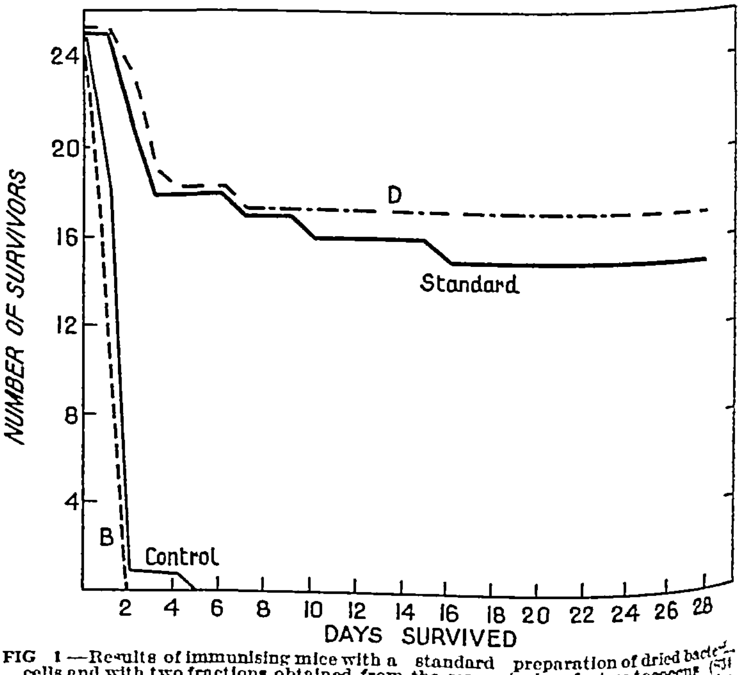


FIG 1 —Results of immunising mice with a standard preparation of dried bacterial cells and with two fractions obtained from the same strain of streptococcus (S34 Group C) The fractions are a NH_4OH soluble fraction (B) and a HCl-soluble NH_4OH insoluble fraction (D) The control mice were not immunised

from acid solution The average rotation value was found to be $[\alpha]_{6461}^{20} = -75°$ in N/10 HCl and the total nitrogen was 12 8 per cent The *fraction therefore appears so* far as can be ascertained at present to be practically homogeneous Since the arginine content is comparatively low (7 2 per cent) the protein would appear to fall into the histone rather than the protamine group

THE FRACTIONATION OF A GROUP A STRAIN

Following the isolation of an immunising fraction from a strain belonging to Group C an attempt was made to isolate a similar fraction *by the same methods from a* Group A strain Richards This had been isolated by Colebrook from a case of puerperal septicæmia and had been passaged through mice until highly virulent the average lethal dose being approximately 1000 organisms It has been shown *to belong to Griffith s Type 3 The infecting dose employed* has been about 100 000 organisms or 100 average lethal doses This strain was found to yield an HCl-soluble NH_4OH insoluble fraction when treated in the same way as ' S34 On testing this fraction it was found to be completely inactive Further tests showed that the activity of the *standard preparation* was destroyed by treatment with N/10 NH_4OH but remained unaltered by N/10 HCl It was therefore decided to extract the living cells directly with N/10 HCl as is shown in Table II When all acid-soluble material had been removed the extract was passed through a bacterial filter and neutralised being kept just acid to litmus A heavy precipitate formed which was removed This has been called Fraction A The clear supernatant was concentrated and dialysed to remove inorganic salts A further precipitate formed called Fraction C This was also removed by centrifuging The supernatant after dialysis appeared almost free from organic matter and was discarded The two precipitates were dried off and tested as before for immunising activity and the results are set out in Fig 2

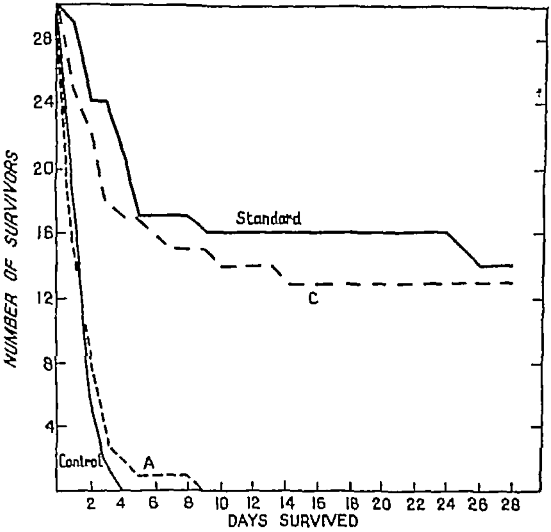


FIG 2.—Results of immunisation with the standard preparation and with two HCl-soluble fractions of strain Richards (Group A) Fraction A is a precipitate on neutralisation and Fraction C a precipitate on dialysis.

It will be seen that the precipitate forming on dialysis (Fraction C) showing 13 out of 30 or 43 3 per cent, survivors has produced a degree of immunity equal to that of the standard preparation with 14 out of 30 or 46 7 per cent survivors The precipitate formed on neutralisation of the extract (Fraction A) however has proved entirely inactive Further tests with different batches of the active fraction have also produced positive results though there is considerable evidence that the Richards active fraction is much more labile than that from S34 and rapidly loses its potency on keeping Attempts are now being made to fractionate this material further since it almost certainly contains some of the inactive Fraction A It is not possible to say to what extent the immunity induced by the active fractions of S34 and Richards is specific since cross *protection tests with these substances have not yet* been made That induced by the unfractionated cells however has been shown to be strictly type specific It is of interest to note that the antigenic components which induce an active immunity against hæmolytic streptococci belong to a different chemical category from those which induce an active immunity against bacilli of the typhoid paratyphoid group This finding is in accord with the results obtained by many other workers who have studied the in vitro reactions of these bacteria or of extracts derived *from* them and with the view that the component concerned in antibacterial immunity are those that dominate the surface of the bacterial cells in their virulent state

Summary

(1) Fractions capable of inducing active immunity in mice have been isolated from strains of hæmolytic streptococci belonging to Groups A and C

(2) The active fraction from the Group C strain is soluble in dilute acids but insoluble in ammonia and is probably a protein It appears to be comparatively stable and is not inactivated by ammonia

(3) The active fraction from the Group A strain resembles that from the Group C strain in being acid soluble but is inactivated by NH_4OH and loses its potency more readily on keeping It also appears to be protein in nature

Our thanks are due to Dr A. W Stableforth who kindly supplied the strain S34 and to Dr L. Colebrook for strain Richards One of us (I B H) is indebted to the Halley Stewart Trust for a personal grant The general expenses connected with the investigation have been met by the fund mentioned in the preceding paper

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DIAGNOSIS AND TREATMENT OF DUODENAL ULCER *

By Fletcher McPhedran, M B Toronto
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If we except arthritis in all its bizarre forms, there is probably no serious disease that can make a patient feel more miserable than duodenal ulcer It is very trying to be perpetually or periodically conscious of discomfort related to food If there is also pain, which is common, the sufferer loses his ability to concentrate on his work, conversely worry about his job is in our experience one of the main causes of exacerbations

In so far as danger is concerned, there are the three major complications, all of which demand surgery—namely, perforation, repeated hæmorrhage, and stenosis from scarring But in two and a half years we have had only one patient, that we can trace, who has had to submit himself to operation, and then for a stenosis

Duodenal ulcer is encountered especially in men made tense and irritable by the demands of environment and occupation. One sees, too, sensitive men of middle age They have been employed all their lives, often in one firm They see their less efficient fellows laid off, and perhaps they are on short-time themselves Meanwhile they have been buying on the instalment plan and now for the first time in their lives have financial worries They lie awake wondering when and how they will be able to make payments on the household articles that are almost their own Often the weak link of the chain of their health is the digestive system, and it may be that the overactivity of the brain produces abnormal circulatory or spasmodic conditions in the duodenum which rapidly lead on to ulcer They have no hobbies with which to occupy their spare time The radio and the movie are their only distraction They have never done anything constructive Their work has consisted only in the repeated small operations of a modern industrial plant They have not done anything to distinguish them among their fellow men They have never been renowned for growing the best roses in the neighbourhood They are not distinguished as home "handymen," with the joy of accomplishing good repairing or construction They neither golf or bowl

There is another class of patient who is particularly pathetic in that he has had reason to consider himself an efficient machine physically and intellectually He is the "go getter,' the salesman, who after his day of high pressure selling must make out, and mail to the firm his daily report—whose sales must each month exceed those of the corresponding month of the preceding year In this connexion it is interesting to note Cushing's reference to the diencephalon and its relation to ulcer It is easy to imagine that ulcer may possibly have a determining cause as remote from the site of the lesion as is the brain

SYMPTOMS

The essential symptom, in our experience, is the periodicity of gastro intestinal distress If the classical symptom of pain at 2 A.M is present, the ulcer has been of long standing We have observed too that bouts of constipation, periodic in character and occurring without any other gastro intestinal symptom, are of cardinal importance Indeed, one may say that this symptom points to ulcer unless there are some other signs to make the physician sure there is some other cause for this periodic distress Many of these patients have "dieted." They have been advised to avoid the rough foods that are known to irritate an ulcer, such as raw apples, radishes, coarse greens, and condiments Often they will have been told by friends to stop the use of meat and even eggs The only protein taken then is the utterly inadequate amount found in milk and soups

TREATMENT

We have found it advisable, at least in the early stages, not to order an X ray examination Why fix in the patient's mind that he has, or is suspected of having, an ulcer ? It is better at first to try the therapeutic test of dieting and to warn him, if relief follows, that he is likely to have an ulcer unless he follows the régime outlined for two years Early treatment will be successful if it is thorough but it must be followed conscientiously for at least that length of time We find that the emphasis laid on alkalis is not justified Years of experience in medical practice have brought no uniformity of opinion as to which alkali is the best, and there is no agreement about the results of their use They are the least important of the means at our disposal

Physicians in the past have paid great attention to the details of what the patient should eat but have not advised him enough as to when and how he should eat his food According to our experience it is necessary that he should have milk and biscuits often and regularly We attach the greatest possible importance to his taking half a glass of milk and a biscuit every two hours between rising and bed time This applies whether one of the simple meals here outlined has just been taken or not if, for example, he has drunk his milk and eaten his biscuit at 11 A M and at 12 he has had his noonday meal, he should still drink half a glass of milk and eat a biscuit at 1 o'clock We regard this frequent feeding as of cardinal importance For breakfast he should have a cereal with milk, soft boiled or poached eggs, bread and butter, and perhaps a little jam or honey For dinner, a milk soup, mashed or pureed vegetables, bread and butter, and a milk pudding For supper, a list like that of breakfast with stewed fruit added to it He should be told not to smoke, not to take alcohol or condiments Of these restrictions the avoidance of tobacco in any form is of paramount importance If progress is good, his diet is enlarged to the three main meals described below, with refreshments between each meal These extra foods must be taken at least fifteen minutes before the time at which he is habitually conscious of distress It will be noted that the whole plan is to anticipate and prevent discomfort from, or even consciousness of, his stomach. That is to say, if the distress usually occurs at 4 P M, milk and biscuits should be taken at 3 45

It is essential that the patient should have enough time after the midday meal for a rest of an hour The lathe hand, the professional man, the clerk, the stenographer all can take enough time off to take milk and biscuit between meals If he does not do well on this simple diet, we find it advisable to add an antacid with atropine A warning is necessary against over-dosage, but atropine is very important.

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* Read before the Ontario Medical Association on May 31st 933 (see addendum at end of paper)

Constipation is often a major symptom. We advise going to stool regularly at exactly the same time adopting a proper squatting posture and exercising counter pressure with toilet paper between the coccyx and anus This prevents prolapse (thus making the defæcation easier) and perhaps stimulates the rectum to increased activities by exaggerating the contact pressure between its posterior and anterior walls

The patient should be instructed that if he does not follow the dietary instructions of frequent feeding for at least two years the ulcer may return He should also be warned that if he does abandon his diet the slightest symptom of indigestion should be followed by a prompt return to his régime. Far too often we find patients who have had news from friends of some miraculous alkali that was going to enable them to eat as seldom as they wished

The patient should come back in two weeks again after a month's interval and subsequently if the progress is satisfactory every three months for two years Warning should be given of the symptoms of the major complication of a perforation Hæmorrhage is certain to be noticed. The physician can assure himself of adequate observance of his orders by directing the patient to write down a typical day's menu. Often it will be found that the light nourishment ordered for mid morning and afternoon has been omitted. Emphasis should then again be laid upon this essential point Failure through such omission is not a medical failure It is the patient's failure to take advice It is dangerous in the extreme for it may cause continuance of the ulcer or a recurrence.

Most books and instructions have that quaint phrase avoid worry How should one not worry if one is persistently conscious of distress when there should be a feeling of well being? It is far better to advise the patient constructively as to how he can employ his spare time There may be twenty ways of remembering but there is no way of forgetting except by diversion He should have occupation in leisure hours, not laborious but pleasurable and if possible showing profits that will distinguish him from his fellows Gardening home carpentry making or doing jig saw puzzles or doing cross word puzzles or photography will so interest him that he will not worry Increased mental activity purposelessly applied—that is worry—makes the ulcer worse

DAILY RÉGIME

The following is our daily regime for these patients —

A glass of water slowly and then another

Breakfast —Apple sauce prunes or a ripe banana. Cooked cereal with top milk and wheat germ Boiled poached or coddled egg Toast and butter Tea or coffee with plenty of milk

Water-closet —At same time daily Position and pressure as described above

10 30 a m —Glass of milk or buttermilk and a biscuit

Dinner —Strained cream of vegetable soup or milk to drink No veal or pork but any roast boiled or broiled fish beef or lamb potato and another boiled vegetable mashed through a sieve and butter added Any milk pudding (custard, tapioca, bread pudding or blanc mange) jelly or stewed fruit bread and butter

Rest an hour

4.30 p.m —Glass of milk and a biscuit

Supper —Cream soup made with any of the above puréed vegetables or tomato juice or milk Any cold meat cheese fish or egg dish Stewed fruit with milk Toast or dried bread Milk in tea or coffee

10 p m —Glass of milk. Toast

Bed at 9 15 five nights a week. No smoking or drinking Dose of medicine after each meal

The powder is as follows —

Atropine sulphate	1/75 grain
Calcined magnesia	120 grains
Soda bicarbonate	120
Calcium carbonate	ad 480

½-teaspoonful after meals and as required. To be repeated Watch for atropine intoxication.

ADDENDUM

We have purposely refrained from publishing the above paper for several years, lest its optimism should prove unjustified We have been more than ever impressed however by the success of our efforts The points that we want to impress at this date are first of all, the need of being hopeful secondly the inadvisability of fixing the patient's attention upon a duodenal ulcer (as may be done by X ray examination) thirdly the necessity for frequent feeding and fourthly and most important of all, the importance of diversion if recurrences are to be avoided.

THE USE OF "DORYL" (CARBAMINOYLCHOLINE) IN POST-OPERATIVE AND POST-PARTUM RETENTION OF URINE *

By Chassar Moir M.D F R C S Edin F C O G

READER IN OBSTETRICS AND GYNÆCOLOGY IN THE UNIVERSITY OF LONDON AT THE BRITISH POST GRADUATE MEDICAL SCHOOL

The nervous control of the bladder musculature and the processes involved in the act of micturition are extremely complicated and still only in part understood It is certain however that much of the muscular activity of the bladder is under the control of the parasympathetic nervous system

As the result of the investigations made during recent years by Dale and Loewi and their associates it is now generally agreed that nerve impulse in the parasympathetic system is transmitted across synapse and passed from nerve ending to muscle or gland by the momentary liberation of a chemical substance acetylcholine which is itself almost instantly destroyed by enzyme action. Acetylcholine can be prepared synthetically and if administered in an appropriate manner it will reproduce the effects of parasympathetic stimulation. It has therefore been suggested that acetylcholine or an allied substance might be effective in promoting micturition in cases of post-operative retention of urine due to atony of the bladder wall or even to reflex spasm of the bladder sphincter

Since acetylcholine is rapidly destroyed by enzyme action in body fluids injection of even relatively large doses of this substance cannot be expected to produce more than a fleeting stimulation of the organ controlled by the parasympathetic nerves system On the other hand, certain other choline esters have a pharmacological activity approaching that of acetylcholine while being, at the same time, much more resistant to enzyme action One of these esters—carbaminoylcholine—has been issued to the medical profession under the trade name of Doryl. Among its suggested therapeutic uses is the treatment of retention of urine, and Schulze[1] has reported successful results in some 75 per cent of cases in which it was used after operation or after childbirth The Therapeutic Trials Committee of the Medical Research Council agreed to accept doryl for further clinical trial in this way, and the manufacturers (Messrs E Merck of Darmstadt) have kindly supplied it for the purposes of the tests described below

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* A report to the Therapeutic Trials Committee of the Medical Research Council

DOSAGE OF DORYL

Doryl is issued in tablet form for use by mouth and also in ampoules containing 0 25 mg of the pure substance (carbaminoylcholine) dissolved in 1 c cm of fluid, the solution is intended for hypodermic or intramuscular injection In a few preliminary experiments oral administration of doryl proved ineffective in promoting micturition, and injection was therefore resorted to In the cases to be reported a full ampoule was used, and the dose was usually given intramuscularly

RESULTS IN CASES OF RETENTION OF URINE

In a preliminary series of some 10 cases of post operative retention of urine, injection of doryl was found to be remarkably successful in causing the patient to void urine within a few minutes, thus avoiding the necessity of catheterisation After this initial success, detailed records were kept of the effect of the drug in order to provide a report for the Therapeutic Trials Committee, and the present statistics refer to this later series of observations

The patients were unselected and consecutive cases of retention of urine occurring in the gynæcological and obstetric wards of Hammersmith Hospital (British Postgraduate Medical School) All the cases were those showing evidence of bladder distension of such degree as would, in ordinary circumstances, necessitate the use of a catheter The total number of cases collected is comparatively small (38), but it is intended that the results should be considered in conjunction with the similar report by Mr J S Maxwell, who tested the drug in the surgical unit of the Western General Hospital, Edinburgh The case records have been divided into three groups—successes, partial successes, and failures By a "partial success" is meant that the patient voided urine after administration of doryl, but that subsequent evidence showed the bladder still to be incompletely emptied.

Successes	14	Abdominal section	4
		Colporrhaphy	3
		Curettage	2
		Attempted abortion self injury	1
		Post partum	4
Partial successes	8	Colporrhaphy	1
		Post partum	7
Failures	16	Colporrhaphy	3
		Bartholin gland excision	1
		Post partum	12

In most of the cases one dose only of doryl was given but in 5 the dose was repeated Thus a patient who had voided urine satisfactorily after administration of doryl later had a recurrence of retention, this was again successfully treated by an injection of the drug Similarly, 3 patients listed as partial successes had a recurrence of retention and were again given doryl (twice in one case), the results were again partial successes One patient, who was suffering from over distension of the bladder, and who had failed to respond to the drug, was not relieved by its repeated administration

It was found that if doryl was to be effective, the patient usually felt a desire to micturate within 15 minutes of the injection Sometimes the effect appeared in as short a time as 5 minutes, and for that reason it was found to be important to give the patient a bed pan immediately after the administration of the drug It is fairly certain that some of the early failures were due to a lack of appreciation of this fact—the urge to micturate being allowed to subside before the patient was given facilities to void urine

COMMENTARY

Some of the successes were remarkable, and not infrequently the patient passed flatus or fæces in addition to voiding urine

It will be seen that most of the failures were in cases of post partum retention of urine Some of the patients in this group were suffering from injury to the vulva or perineum following difficult forceps delivery, and the compression of the urethra caused by the subsequent œdema and muscular spasm possibly explains the non success of the drug It seems likely, however, that a more common reason for its failure was a delay in the use of the drug until the bladder had become seriously over distended It is remarkable how often a puerperal patient has a symptomless yet gross over distension of the bladder It is also not uncommon to find that after apparently normal micturition such a patient will have a residual bladder content of 15 oz or more In some of the failures with doryl subsequent catheterisation showed that the bladder contained more than 30 oz of fluid This over distension is regrettable, yet it is notorious how often such a condition of the bladder escapes detection during labour and in the puerperium It is probable that had post partum retention of urine been detected at an earlier stage the doryl treatment would have been considerably more successful

As was to be expected, colpoperineorrhaphy caused in some cases a stubborn retention of urine the mechanical procedures involved in this operation not infrequently produce a compression of the urethra which only catheterisation can overcome

SIDE EFFECTS

The pulse rate was in each case taken before injection and again quarter of an hour after administration of doryl Usually it was unchanged Sometimes it was slightly accelerated In one case it dropped from 84 beats per minute to 60

In 8 cases the patient complained of nausea or faintness, or admitted to having these symptoms after direct questioning In one case the faintness was of some severity and led to anxiety on the part of the nursing staff, it lasted for a few minutes only Another patient who felt nauseated, actually vomited some minutes after the injection A few patients complained of salivation, and a few stated that they "felt hot all over"

In spite of the variety of possible side effects, one is left with the impression that injection of doryl in the recommended dosage seldom causes more than a minor disturbance, and in this connexion it must be remembered that there are many sensitive patients who are upset by the procedures involved in any hypodermic injection

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THE POSSIBLE EFFECT OF SUGGESTION

It may be questioned by some whether the successful results recorded in this paper were not in fact due to the effect of suggestion on susceptible patients and were therefore unconnected with the specific action of the drug in reproducing the effects of parasympathetic stimulation. This criticism cannot be answered dogmatically but there is reason to believe that suggestion is not the chief reason for the successful result of the treatment. All the patients on whom the drug was used had already resisted the simpler methods usually adopted by the nursing staff to encourage a patient to pass urine Again the bladder evacuation usually coincided in time with the appearance of the side effects in those patients who showed such symptoms Finally the fact that a few patients not only micturated under the influence of doryl but also evacuated a substantial part of the content of the colon and rectum considerably strengthens the belief that the bladder effect is part of the specific pharmacological action of the drug

SUMMARY

1 A series of 38 cases is reported in which post operative or post-partum retention of urine was treated by injection of doryl (carbaminoylcholine)

2 Doryl is often remarkably successful in causing the patient to void urine naturally and is worthy of trial in patients for whom catheterisation would otherwise be necessary

3 Its most successful use is after abdominal section or after a simple vaginal operation It is least successful in patients suffering from over distension of the bladder—especially after childbirth and in cases in which there is mechanical obstruction to the passage of urine

4 One of the chief errors to guard against is the assumption that a patient has completely emptied her bladder by the micturition induced by the drug Often the evacuation is only partial

5 Side effects are seen in about a third of the cases, but are seldom serious

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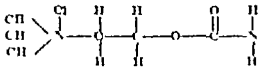
THE TREATMENT OF
POST OPERATIVE RETENTION OF URINE WITH DORYL *

By J S Maxwell, M.B Edin

LATE HOUSE SURGEON IN THE SURGICAL UNIT WESTERN GENERAL HOSPITAL, EDINBURGH

In recent months all cases of post-operative retention of urine in the surgical wards at the Western General Hospital Edinburgh have been treated by injections of Doryl solution

The makers (Messrs E Merck of Darmstadt) state that doryl is carbaminoylcholine chloride its formula being:—



Its actions are similar to those of acetylcholine but it is much more stable and is claimed to be effective even when given by mouth. It is issued as tablets containing 0 002 gramme doryl for oral administration and as an isotonic solution in ampoules for injection; the dosage suggested for subcutaneous or intramuscular injection is 0 00025 g doryl which is contained in 1 c.cm. of the solution

Through its influence on the parasympathetic nervous system doryl has been shown in pharmacological experiments to cause a decrease in heart rate a fall in blood pressure dilatation of the peripheral blood vessels and contraction of the muscle of the bladder and intestinal tract It is recommended by the manufacturers for the treatment of such diverse conditions as retention of urine intestinal atony hyperpiesia, paroxysmal tachycardia and eclampsia but the present investigation is concerned only with its action on the bladder muscle The antidote in cases of overdosage is atropine

INCIDENCE OF POST OPERATIVE RETENTION

During the time of the investigation 240 general surgical operations were performed at the hospital Post-operative retention of urine developed in 17 cases or 7 per cent. It did not occur in any patient *below the age of twenty years* between the ages of twenty and eighty the incidence was nearly uniform at all ages but the 14 patients over the age of eighty escaped this symptom The incidence in men was 7 7 per cent and in women 6 4 per cent

Excision of hæmorrhoids was the operation most often followed by retention of urine next came appendicectomy and other operations within the abdomen In the 30 patients operated upon for radical cure of inguinal or femoral herniæ there was no instance of post operative retention of urine

DOSAGE OF DORYL

If 24 hours after operation the patient was acutely distressed and could not pass urine 1 c cm of doryl was injected subcutaneously This dose was repeated at half hour intervals until the retention was relieved or until a total of 3 c cm had been given There was however no clear indication against reducing the interval between doses or of giving even more than 3 c cm (0 00075 g) subcutaneously Oral administration was not tried in this experiment

RESULTS

Of the seventeen patients treated with doryl eleven responded rapidly and passed urine within 5–25 minutes of the first injection Four others required three injections each passing urine within 15–30 minutes of the third dose The remaining two patients failed to micturate within 30 minutes of the third injection and might therefore be classed as failures both these however were relieved spontaneously within two hours In the successful cases in this series it appeared that doryl caused adequate emptying of the bladder and in all but two of them micturition thereafter proceeded normally Two patients had recurrences of retention one on the second and third days after operation and the other only on the second day the first of these had had an excision of hæmorrhoids and the other an intra abdominal operation [illegible] recurrence of retention responded within 5 20 minutes to a single injection of 1 c cm doryl.

Operations liable to interfere mechanically with the urethra had been performed in five of the seventeen cases in this series (excision of hæmorrhoids in four and colpoperineorrhaphy in one) in all five of these cases the retention responded to a single injection of 1 c cm doryl, though in one, as mentioned above, it recurred on the two subsequent days Since the use of doryl began, no case in these wards has been catheterised for post operative retention of urine

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* A report to the Therapeutic Trials Committee of the Medical Research Council

Three cases of acute retention due to prostatic enlargement also responded to doryl, though others failed to do so It has been tried with success in retention due to periurethral abscess, pneumococcal meningitis, and in a case of severe and chronic atonicity of the bladder and colon in a girl aged 23

SIDE-EFFECTS

The most common side effect was sweating It was never very profuse A few patients complained of nausea and a feeling of weakness Sometimes the pulse rate was not affected, but more frequently there was a decrease of about 10 beats per minute fifteen minutes after injection The systolic blood pressure also fell, 10–30 mm Hg fifteen minutes after injection After one hour the blood pressure again became normal Flatus was passed in many cases

CONCLUSIONS

Doryl given by subcutaneous injection is a useful remedy for post operative retention of urine The results obtained in this series of cases appear to justify its trial in retention of urine due to any cause other than extreme mechanical obstruction

I am grateful to Sir David Wilkie, director of the surgical unit, Western General Hospital, Edinburgh, for permission to publish an account of this study I am also grateful to the manufacturers of doryl, who supplied the material through the Therapeutic Trials Committee

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RIDER'S BONE

REPORT OF A CASE

BY A MOORE, M B Lond

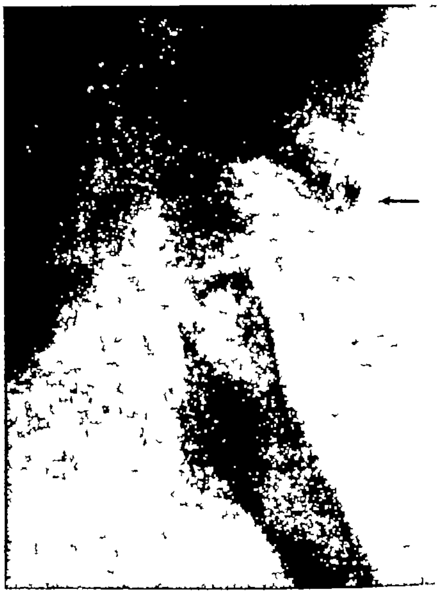
THERE is a tendency to regard the formation of "rider's bone" as a traumatic myositis ossificans

In the following case it seems likely that the tumour was originally caused by riding strains, for the lesion has the pathological structure of a traction exostosis

The patient was a man aged 38 Before the war he was a labourer used to horses but not to hard riding On joining the army he underwent intensive training and passed out as a rough riding bombardier He did not sustain any definite injury during these years of hard riding, and had no trouble until March, 1933 He had returned to labouring work, and while climbing a ladder he felt a sudden pain in his right groin, a loud crack was heard, not only by the patient but by two fellow labourers He was not incapacitated but felt pain and stiffness during the following week The same sequence of events occurred again in March, 1934, when he was running across a field, and he felt the pain and stiffness for five days No further trouble occurred until May 6th 1936, when he took part in a race A similar crack was heard, accompanied by sudden pain, on this occasion he was unable to walk and for the first time medical advice was sought

Examination revealed considerable limitation of flexion at the hip joint and on palpation a bony hard projection was felt between the anterior muscles of the thigh, there was much muscular wasting Radiography showed a mottled opacity continuous with the ilium, arising from the acetabular region and projecting down as a tongue-shaped process anterior to the right femur (see Figure) It was this tongue shaped process that was limiting the flexion of the femur, and it was simply to relieve the mechanical difficulty that Mr W B R Monteith decided to operate, as the patient was at that time completely incapacitated.

The *operation* was not intended to be an attempt at radical cure, but to improve the flexion of the femur and thus enable the man to return to work During the exploration it was discovered that the reflected head of the rectus femoris was taking origin from the distal extremity of the tumour As was suggested by the radiogram this originated from the ilium near the acetabulum The stalactite like projection was successfully removed, and since the wound healed the hip movements have been almost perfect Considering that he has been in continuous employment from that time, and that there are no signs of recurrence of disability, the procedure seems justified If any more radical measures are indicated later, further operation can still be undertaken



Radiogram showing the stalactite-like tumour at the origin of the rectus femoris

Histological report "The tumour is a traumatic osteoma, and has followed the avulsion of a portion of the periosteum due to muscular action There is subperiosteal hæmorrhage and presently organisation, and on the top of that calcification and ossification The section shows, of course, more or less irregularly formed bone with considerable vascularity and many wide intertrabecular spaces, along with areas of osteoid tissue"

In discussing the ætiology of ectopic bone the following theories must first be considered

Embryonic rests were held responsible by Cohnheim. When there is a definite history of muscle strain injury, and direct relation of tumour to periosteum this theory will hardly suffice, though it may explain cases where bone forms in the body of a muscle

Aberrant sesamoids are not usually found in the site common for tumour formation

Inflammation was considered by Grawitz and Salmon to be important but there is rarely any sign of inflammatory reaction with pyrexia When pyrexia follows injury and hæmatoma, bone formation is not invariable

Metaplasia was regarded as the cause by Reichert and others the connective tissue of muscles, fascia, tendons and ligaments being interchangeable and muscle taking on the powers of periosteum The theory seems very complicated and there is no histological proof

Hæmatomata have been considered by some as the primary cause of tumour formation blood corpuscles forming connective tissue and then bone Objection may be raised as in the last theory and neither explain cases in which there is a definite relation between tumour and periosteum

A congenital bone forming diathesis (Virchow) must be considered seriously since muscular injury with subsequent hæmatoma formation is not necessarily followed by bone tumours There must be some constitutional idiosyncrasy

Periosteal theory in which either injury to the periosteum with muscle crushed to pulp is followed by the escape of osteoblasts into the muscle pulp where bone may form or muscle-fibres are torn from their origin with periosteal cells or flakes of bone attached, with a similar result

The animal experiments of Davis and Hunnicutt (1915) are of great interest The results were briefly as follows —

1 Pedunculated transplants in muscle never formed bone

2. Pedunculated flap of periosteum alone never formed bone

3 Free periosteal flaps or pedunculated flaps with bone fragments attached always led to bone formation

In other experiments on animals detachment of individual muscle fibres from their origin by electrical stimulation has led to intramuscular bone formation from detached periosteum with bone fragments.

Although there was no definite history of injury I suggest that the cause of the tumour was the frequently repeated strains of the rectus femoris at its origin, when the man was forced to take up unaccustomed rough riding This sudden violent exercise did not first give a chance for agonistic and antagonistic muscles to become properly balanced as in more gradual training As a result of repeated slight muscle strains of the rectus fragments of periosteum with probably small flakes of bone attached were torn off by muscle fibres and the freed osteoblasts formed bone at the site By repetition of this process a tumour developed with the reflected head of the rectus apparently taking origin from its distal extremity This gave the appearance of a traction tumour Should this theory be true it seems that it is essential for all men embarking on similar unaccustomed violent exercise to have special preliminary training with exercises designed to develop gradually the particular muscle balance required It may be that a fair proportion of men possess the bone forming diathesis of which Virchow wrote

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CLINICAL AND LABORATORY NOTES

DERMATITIS PROBABLY DUE TO MOTOR FUMES

By Arthur Whitfield M.D F R C P Lond.

CONSULTING PHYSICIAN TO THE SKIN DEPARTMENT KING'S COLLEGE HOSPITAL, LONDON

The following case appears to me to be worth recording on account of the difficulty often experienced in tracing the cause of acute outbreaks of dermatitis of the face I have not come across such a case either in my own experience or in my reading of that of others

The patient was a married lady of early middle age who had suffered for many years from urticaria and according to her statement every doctor who had tried to cure it had always made it worse All aperients made it worse and aspirin made her "swell up like a balloon It was also aggravated by oranges but not by grape-fruit Owing to her unfortunate experience with previous treatment she refused to allow me to attempt to cure her urticaria which she said she thought was very slowly dying out

About Christmastime 1934 she drove in a motor-car in the West of England in bleak weather Next day her trouble began with a stabbing tickle" at the top of the left eye and from this it spread until both eyes were sore and swollen and her face scarlet This she not unnaturally attributed to draught She consulted a specialist about it and he gave her a pot of scented cream but no prescription I made a rough examination of this cream; it appeared to me to be of the nature of a vanishing cream and I found that it contained soap At any rate its effect was disastrous as it inflamed her face badly just as it was beginning to recover On leaving off the application and using lead and milk lotion the skin resumed its normal appearance

Later she drove her own car down to see her boy at school and as it was cold weather she had all the windows up Two days later her whole face was again swollen and inflamed.

In February 1936 she consulted me about her face I realised at once that the case was a difficult one and was not inclined to accept the draught as a cause more especially after I had elicited the fact that she had recently stood some time on her doorstep in a cold wind without experiencing any relapse Noting that the windows of her car had been closed on each occasion which had preceded an attack I wondered whether there could be a possibility of fumes in the car as an exciting cause I therefore tried to persuade her to drive with the windows wide open—not a pleasant thing to do in cold weather She was driven by her husband but finding it too cold with the window wide open she closed it all but a crack at the top Next day she had another attack. She then followed my advice and drove some distance in cold weather and reported when I have driven the car since I have had the windows right down I am all over aches and pains but my face is all right"

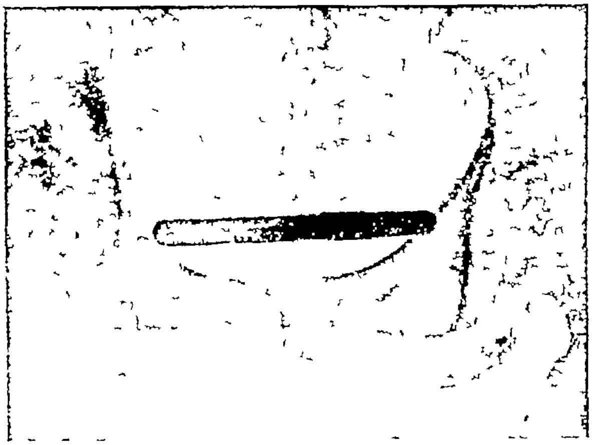
I saw this lady on Jan. 4th this year she has had no further attacks since the last experiment with the closed car nearly two years ago Her urticaria which was spontaneously improving when I saw her has disappeared That her dermatitis was not due to a peculiarity present in one car is proved by the fact that she had the eruption if she drove her other car with the windows closed The repeated experiment of driving in open and closed cars in cold weather is I think as nearly as possible proof that the eruption was caused by fumes in the closed car Owing to the extremely small doses which may affect sensitive patients I deemed it impossible to track down the exact constituent that was responsible but I rather suspect acrolein from partial combustion of the lubricating oil.

When I first saw her I persuaded her to take some glycerin of pepsin and hydrochloric acid with her meal This had an extremely beneficial effect on her urticaria and may have helped to desensitise her and so assist in the cure of the dermatitis On this point I should not like to offer a positive opinion

FOREIGN BODY IN THE BLADDER

BY DESBOROUGH BRODIE, M B, B S Lond.
HON SURGEON TO THE SHEPTON MALLET DISTRICT HOSPITAL

ON June 8th an old lady, aged 78, was doing needle work in bed She lost a clinical thermometer case containing four bodkins In getting out of bed to find it, she was conscious that something had entered her body On July 10th, over a month after the occurrence, she consulted me and was radiographed (see Figure) The case could be felt through the anterior wall of the vagina A suprapubic cystotomy was done and I extracted the case and bodkins Considering the difficulty so often found in introducing a catheter into the female urethra, this accident must be very rare There was no sign of cystitis



Radiogram showing position of thermometer case containing bodkins

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ACUTE RETROGRADE JEJUNOGASTRIC INTUSSUSCEPTION

BY J M GREENWOOD, M.D Manch.
DEPUTY MEDICAL SUPERINTENDENT OF THE WITHINGTON HOSPITAL, MANCHESTER

ACUTE retrograde jejunogastric intussusception was first described in 1917 and less than 40 cases appear to have been recorded since (Adams 1935, Cameron and Macfarlane Pennyfather, Becker 1936) It arises at any time after the operation of posterior gastrojejunostomy and is usually diagnosed primarily either as an acute intestinal obstruction, or a hæmatemesis from a gastric ulcer According to Maingot (1936), when a hæmatemesis occurs after a gastrojejunostomy, one should always think of intussusception, and further, that in a patient with acute intestinal obstruction a diagnosis of retrograde intussusception should be made if the following three signs are present (1) an epigastric scar, (2) visible peristalsis with the waves passing from left to right, (3) a palpable mobile swelling about the mid abdomen.

A male patient aged 47, was admitted on Dec 28th 1936 with a diagnosis of hæmatemesis, possibly from a gastric ulcer He stated that he had had an operation for duodenal ulcer in 1928, and that he had been free from symptoms from that time, as long as he kept to his diet He said that he had had some indigestion recently, but denied any excess over Christmas There was a history of vomiting one pint of blood before admission.

On examination the patient was pale and emaciated but his pulse was regular and had a rate of 70 per min., his temperature was 97° F, and his respirations 20 per min The heart and lungs appeared normal, and the liver and spleen were not felt A mass was found in the epigastrium, and a provisional diagnosis was made of hæmatemesis from gastric carcinoma or ulcer Later, on the same day, the patient vomited 18 oz, and again 22 oz. of dark fluid which was considered to be blood The pulse rate shortly after this was 72, and morphine, saline, and heat were administered On Dec. 29th and 30th melæna stools were present and further attacks of vomiting occurred His pulse rate was usually between 70 and 80 but on one occasion rose to 108 A blood count was as follows red cells, 4,230,000, hæmoglobin, 70 per cent, colour index, 0 83 On the morning of Dec. 31st he again vomited more dark fluid but without any increase in pulse rate, and he said he felt better than on admission He had a further vomit of fæcal odour later in the day At this time he had no abdominal pain, he had had a normal stool and had passed flatus shortly before, he had a moist tongue and a pulse rate of 76 In the abdomen there was an upper right paramedian incision from the previous operation There was no abdominal distension, but the outline of the stomach could be seen, which on palpation was found to be of elastic consistency, not fixed, and not tender No peristalsis was visible and there were no glands palpable in the supraclavicular region. Mr A H Southam was asked to see the patient, and operation was decided upon, with the diagnosis of an upper intestinal obstruction

A general anæsthetic was given, and while in the anæsthetic room the patient passed both fæces and flatus per rectum A stomach tube did not relieve the distended stomach

On opening the abdomen the stomach was found to be enormously distended and the small intestine collapsed and the condition was recognised as one of retrograde intussusception The site of the gastro intestinal anastomosis was examined and the efferent loop of bowel was found to be intussuscepted The intussusception could not be reduced without opening the stomach, the mucous membrane of the intestine was congested and had a few gangrenous patches on its surface The intussusception was reduced with difficulty, and the length of bowel invaginated was estimated at 18–24 in The peritoneal aspect of the gut was good and the gut was considered viable The stomach and abdomen were closed and a continuous drip saline was instituted, but the patient showed signs of heart failure and died 3 days later on Jan 2nd

There seems to be two points of interest in the history First, a mass in the epigastrium of an emaciated man, aged 47, associated with hæmatemesis, was diagnosed as ? carcinoma of the stomach It was later diagnosed as a high intestinal obstruction, but if one had been familiar with the description of acute retrograde jejunogastric intussusception, a correct diagnosis might have been made Secondly, apart from the fæcal odour of the vomit there were no other signs of intestinal obstruction. The pulse rate at the time of the operation was 76, and fæces and flatus were passed in the anæsthetic room, presumably three days after the onset of the intussusception

My thanks are due to Dr M Gamble, medical superintendent of the Withington Hospital, and to Mr A. H. Southam for their permission to publish this case

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MEDICAL SOCIETIES

MEDICAL SOCIETY OF LONDON

AT a meeting of this society held on Jan. 25th the president, Sir WILLIAM WILLCOX, being in the chair a discussion on the

Value of Experimental and Laboratory Training in Medical Education

was opened by Dr JOHN BEATTIE (Conservator of the Hunterian Museum). Laboratory training he said was essentially a training in experimental methods whether they were used in purely scientific work or for obtaining information of value in the diagnosis and treatment of disease. There was no real distinction between it and experimental training except in so far as the latter aimed at the inculcation of what was termed the experimental method whereas laboratory training was a training in technique and the use of methods. The results obtained from these manipulations were valueless unless those applying the results had a full appreciation of the value and limitations of the scientific or experimental method. The educational value to the medical student of his training in the experimental method was something apart from its factual content. John Hunter said to Jenner Do not think, try. Claude Bernard said Think, observe, try and think. Thomas Huxley said that the scientific method was trained and organised common sense. It could therefore be summarised as trained observation and trained thinking. Laboratory work trained the student to use methods which ensured accuracy of observation under known conditions. A distinction must be drawn between the intrinsic value of the subject matter of a science, and the educational value of that science. The method he was advocating engendered a healthy distrust of statements made on authority without apparent or provable evidence. In no field was such criticism more needed and less used than in medicine.

Medical education now commenced—unfortunately in Dr Beattie's view—in our secondary and public schools where chemistry and physics were taught successfully it might be from the point of view of examination but often with great damage to education in the experimental method. The deduction of a natural law from observed facts was of much greater value to the student than his knowledge that the volume of a gas varied inversely with its pressure. This brought him to the problem of the teacher. On arriving at a medical school it was very likely that the student did not know how to learn and even more likely that he did not know how to think. Yet in his first two years he was presented with a cold douche of facts which chilled his enthusiasm and gave him little chance to think. Too often when told to draw what he saw on a slide under the microscope a student would include something which was not there but which his text book led him to expect would be there. Good teaching would make sure that careful observation was gradually developing along with a critical sense. In anatomy schools too often students were lectured to in such a way that curiosity and enquiry were stifled. With the wealth of material in anatomical laboratories it ought to be and indeed was possible to lead the student away from considering that the final examination was the ultimate object of his course and to train him in manipulative technique accurate observation and logical deduction.

About the value of a scientific training in medicine there were two diametrically opposed points of view. Oliver Wendell Holmes said that, if a man had not plenty of good common sense the more science he had the worse it was for his patients. The other view could be summed up by saying that the most important difference between the practical doctor and the truly scientific one was that the patients of the former were more likely to die. In his own view the success of a doctor's education depended entirely on the emphasis which had been laid on the method and spirit of science. The methods of the diagnostician were essentially those used in procuring scientific data: accurate observation and experiment with logical deduction. The observations were made first by the unaided senses and then with instruments of precision and various laboratory procedures. From the educational point of view there was no difference between these and the experimental method used by the student in his laboratory unit. The data thus obtained when properly correlated and analysed according to the rules of the experimental method led to a conclusion as scientific as those of the investigator in a physiological laboratory. Many clinicians who continually insisted on the value of experience failed to realise in teaching that the medical student should obtain his knowledge for himself. There were profound differences in the training of medical students here and in America. In America the training in the medical sciences aimed specifically at inculcating the scientific method and ensured that there was no overloading of the student by masses of factual data. The student reached hospital eager and keen to carry on his clinical work in the same spirit. But in the ward the whole atmosphere seemed to have changed as he seemed not to be trusted to do anything. Too frequently he was not only told to listen to a heart but also what he would hear. In the English schools the position was reversed the routine laboratory courses seemed designed to crush out the student's desire to find things out for himself. Minot once said it was a disgrace to a university to appoint a man as professor chiefly because he was a good teacher; only investigators could give university instruction. On reaching the hospital ward the English student had the advantage over the American student that he was made to realise he must obtain his data for himself and draw his own deductions. That being so the value of the experimental method in teaching could not be denied. To state that the main purpose of medical schools was to turn out efficient practitioners was only another way of stating that they must be expert scientific investigators.

Prof JOHN RYLE (Cambridge) asked how far time could be allowed in the student's curriculum for the claims of the laboratory sciences. It was profitable to review the relative merits of laboratory and observational or bedside training especially as the merits might seem to vary with the ultimate destiny of the individual student. Some thought that in this matter a parting of the ways had been reached and that two curricula might be devised one for the man who wished to be a practising doctor the other for the medical scientist the laboratory worker. It was now customary for medical students to do their preliminary scientific work at school which meant that from the age of 16 or thereabouts they were specialising in chemistry physics and biology. Often unfortunately these were years of cramming rather than of training. The time available and the requirements of examining bodies also rendered a genuine experimental training impracticable at this stage The students were given a certain number of facts about crayfish and dogfish, and they learned them to pass examinations, but that was not a proper introduction to the observational or experimental method For a further three years, in the case of Oxford and Cambridge, they were concerned with anatomy, morbid histology, physiology, and an introduction to biochemistry, and perhaps general pathology In other words, four years at least were devoted to laboratory studies before there was any contact with a patient or a clinical problem Though valuable and necessary ground work was covered, these years involved so much instruction and accumulation of information by book and class and lecture that little time was left for thinking or argument, personal experiment, or a philosophical appraisement of experimental methods Although improvement had been attempted of late no concerted effort was made as a rule to bring home the essential unities of physiology and pathology, or the solid contribution which those two subjects could make to the study of man in health and disease

There was however a larger criticism of this earlier part of the curriculum, and that was that it did nothing to encourage unprompted observation or individual initiative in the perception and solution of naturally occurring problems A young man blessed with the instincts and hobbies of a naturalist and the important faculty of inquisitiveness might survive this type of training, and even derive new advantage from it, but such young men were exceptional The majority were decidedly unobservant, and the longer their training as observational scientists (naturalists or clinicians) was postponed the harder they would find it to acquire the necessary aptitude Moreover, since their scientific education had started early to the exclusion of Latin, literature, and logic, most of them had no compensatory qualities in the shape of humane understanding or powers of language and expression Among the best and sanest doctors in the world must be included a familiar type of Scotsman—a breed blessed with common sense and generally with a very sound general education In contrast, it was no rarity to find a student with a distinguished scientific record shaping very poorly in diagnosis, very slow in the development of clinical sense, and very clumsy and irrational in his therapeutic suggestions Unfortunately his disability tended to make him discontented with, or even contemptuous of, clinical methods Most good biologists, on the other hand, had been capable both in the observational and the experimental field, and whatever our goal, were we not all students of human biology? The aim surely should be to see how the laboratory approach and the clinical approach to medicine could be planned to run a parallel course The chief necessity was to keep human physiology in the foreground

In deciding whether separate curricula for scientist and practitioner were desirable it was necessary to ask whether the present curriculum included less than the scientist required, or more than the practitioner required Prof Ryle's own belief was that the honours schools of the older universities and the second M B of London provided an adequate standard for the intending scientist, and he was doubtful whether the standard could be lowered for the intending practitioner For both, however, the actual bulk of the subjects taken could be reduced A greater selection of subjects should, he thought, be sanctioned within the framework of physiology and anatomy so as to allow of a more intelligent study and lessen the necessity for cramming With this choice of subject there should be a choice of question in the examination The average student and intending doctor might for example concentrate more on a group including the cardiovascular system, the digestive tract, and the central nervous system, while the intending biochemist might concentrate on biochemistry, metabolism, and respiration But how often did a man know at this early stage what he wanted to do later? This was the strongest argument against a bifid curriculum It was as important for the scientist to receive the broad stimulus of the ward as it was for the clinician to be well grounded in the ancillary sciences And in the preclinical period nothing stimulated the student so much as a judicious attempt to illustrate his anatomical physiological and pathological studies with clinical material

DISCUSSION

Prof GREY TURNER spoke of the need to inculcate the grammar of the scientific method at the outset of the student's career It was not so much a matter of what was to be learned from the application of scientific methods as how to apply those methods, so that when the student came into contact with the problems he would know better how to approach them Therefore, even before the student came into contact with patients, he should be made familiar with the best methods for elucidating the problems of disease Students should learn that research was not necessarily finding out something new, but discovering something for themselves The scope of the medical curriculum was largely a question of balance, the fact that there were many types of students he thought was mainly due to differences of environment Too much latitude should not be given to a student's bias

Dr R A YOUNG would have it realised that medical education was only one aspect of general education. He had always tried himself to inculcate the inquiring, not necessarily the sceptical, attitude of mind. The student should be told that because a statement was made with a certain amount of authority it was not necessarily true, all great advances had been made by questioning what had previously been accepted. He remembered the time when the medical man who wanted to work in a laboratory had to do so by stealth, fearing lest being scientific he would not be sufficiently practical. He would like to see the word "research" in medicine replaced by "investigation" Medicine, as a science, should be looked upon as a branch of biology

Dr C M WILSON (Dean, St Mary's Hospital Medical School) suggested that a false antithesis has grown up between the clinician and the man of science A man of science was not one who used certain instruments in certain places, the paraphernalia of a laboratory were devices to make observations easier and more accurate than they would be if we depended on our unaided senses But we did not become scientists by using instruments to sharpen observation, it was a man's mental processes that made him a scientist Such a man was committed by the way he was made and by his training to a critical scrutiny of facts He was cautious and guarded, he had put aside prejudices and preconceptions It was this attitude of mind which it was the first duty of a medical school to foster Laboratory training helped us to this end because it was primarily a place where tentative hypotheses were put to the test A man working in a laboratory soon became conscious of the superiority of a statement that could be proved or had been proved over one that he had to take on the authority of his teacher He was initiated into the nature of evidence and nothing in the practice of our calling was quite so important to him as that

Lieut Colonel A H **Proctor** (Dean British Post graduate Medical School) felt that the medical student of to day got very little training in the experimental method He was usually given the explanation long before he started doing the experiment himself he was not told what was the problem he was faced with nor how to think about it. Provided the student had the right teachers his clinical work might start earlier than at present

Dr **John Freeman** contended that pure science was not the aggregation of data but an attitude of mind scientific education was education in a state of mind Students destined for general practice were filled up with many facts they were never likely to need Yet he did not know how examiners were to be prevented from asking foolish questions

Dr G W **Goodhart** stated his objection to having two separate curricula according to the kind of work the student wished ultimately to follow When he entered upon laboratory work himself he was given to understand that he must give up any idea of clinical medicine otherwise he could not claim to be a pathologist He lamented the fact that so few students knew how to use a clinical laboratory

Dr **Lionel Whitby** insisted that every doctor must have a fundamental basis of fact before he could attempt to work as an experimentalist Some thought the student had too much laboratory training and too little chance of observation in the wards but just as the pace of an army was that of the slowest soldier so the teaching of a class had to be regulated by the capacity of the dullest.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

At a recent meeting of this society held in Liverpool with Dr **Ruth Nicholson**, the president in the chair a paper on

Ruptured Uterus

was read by Dr D C **Racker** (Manchester) who described three cases treated at St. Mary s Hospital Manchester by supravaginal hysterectomy combined with blood transfusion and gum saline infusion by continuous drip In one case the patient had been in the hospital since just before labour began the diagnosis was made immediately after rupture and Dr Racker at once performed hysterectomy In the two other cases the uterus had ruptured before admission and one patient was almost moribund on arrival after a long journey In none of the three had there been a previous Cæsarean section but all had had difficult deliveries previously Two of the patients recovered completely but the third who had been so ill on admission died eight hours after operation. The anæsthetic used was nitrous oxide and oxygen in one case morphia and local (Novutox) in another and ether in the third

It appeared said Dr Racker that rupture of the uterus was becoming not less but more common than it was thirty years ago The increase could not be attributed to the greater frequency of Cæsarean section for the figures for rupture through an apparently normal uterus were not diminishing In these cases he thought there had probably been some previous trauma to the uterus even a partial or incomplete tear which had passed unnoticed and he therefore emphasised the importance of a thorough intrauterine examination after all difficult instrumental or manipulative deliveries In treatment he felt sure that the method of choice was supravaginal hysterectomy except possibly in cases with small incomplete tears Where a Cæsarean scar had ruptured it might be best to quickly suture the torn edges but sterilisation must follow later for no patient who had had a ruptured uterus should be allowed to become pregnant again Treatment per vaginam had no place whatever apart from small incomplete tears and intra uterine tamponage had always given extremely poor results. If the presenting part was low the temptation was to extract the child and operate later but this temptation should be resisted for the extraction might increase the hæmorrhage alarmingly bring down intestine or other viscera enlarge the tear and greatly lengthen the time before operation could be carried out. Formerly rupture of the uterus was nearly always fatal but with the introduction of hysterectomy in its treatment about 1900 the fatality rate suddenly decreased Even now however it was still alarmingly high about 25–40 per cent. in various clinics The prognosis depended on the interval between the accident and operation and on the amount of bleeding—i e. whether the placental side had suffered or a large vessel had been torn. Provided there were no vaginal manipulations the bleeding was often surprisingly slight even where the fœtus was lying free in the abdominal cavity A third factor—perhaps the most important—was sepsis Most patients had a somewhat stormy convalescence but with suitable treatment they should be discharged in a healthy condition

Mr A A. **Gemmell** described a case he had lately attended in which a woman was admitted to hospital after failed forceps and it was found necessary to perform Cæsarean section After removal of the child a vertical tear was found in the posterior wall of the uterus This was sutured and the patient recovered

Dr **Rhoda Adamson** (Leeds) maintained that trauma at a previous confinement was not a necessary ætiological factor She recalled a case of an 8 para who had had easy confinements yet ruptured her uterus during the first stage of labour as a result of turning suddenly from her back on to her side She died within ten minutes and post mortem a large uterine tear was found —Dr J W [illegible] (Manchester) referred to a case of rupture in which the uterus was infantile in type —Dr E A Gerrard (Manchester) supported Dr Racker contention that previous trauma is an important cause He pointed out that spontaneous rupture in a primigravida is rare

Obstructed Labour

Mr T N A **Jeffcoate** (Liverpool) reported the case of a woman aged 20 who was first seen at the 30th week of her sixth pregnancy She had had one previous abortion and four previous labours of the latter the first three had been normal but the fourth in 1932 was difficult and necessitated forceps delivery

When she was first seen her general health appeared excellent but on routine antenatal examination a cystic swelling was found behind and slightly to the left of the uterus. Its exact limits and size were difficult to define but there seemed to be no doubt that it was an ovarian cyst which was below the presenting part almost certain to obstruct labour The previous history of labours increasing in difficulty supported

She was admitted to hospital and allowed to go into labour spontaneously on June 30th, 1934 After she had been in labour eight hours, the cervix was two fingers' dilated, the membranes had ruptured, and the head was high above the cystic swelling Lower segment Cæsarean section was performed under general anæsthesia, and a living female child weighing 7 lb 4 oz was delivered When the uterus had been sutured the pelvis and abdomen were explored, and the operator was horrified to find no tumour The uterus, in fact, was unicornuate and there was no appendage on the left side A little thickening beside the pelvic colon was noted, but nothing to account for obstructed labour The placenta had been situated rather low down on the left wall of the uterus, and it was concluded that the sensation of a cystic swelling must have been produced either by the placenta or by a sacculation of the malformed uterus The puerperium was uneventful except for mild pyelitis associated with a slight rise of temperature on the fourth to ninth days This responded quickly to treatment with alkalis Careful bimanual examination a month after operation revealed no abnormal physical signs, and Mr Jeffcoate failed to excuse himself on any grounds for what he thought to be a gross error in diagnosis

The patient was next seen in October, 1935, when she was pregnant again (last menstrual period May 19th) The uterus was enlarged to the size of an eighteen weeks' pregnancy, and no unusual physical signs could be found on *vaginal examination* However, she was observed closely and with great interest, and examined repeatedly At the 30th to 32nd week of pregnancy the "tumour" again made its appearance, and it became more obvious as pregnancy advanced The case was discussed with a number of colleagues, and they one and all agreed that the correct treatment was to institute trial labour again, but they were unable to suggest the pathological nature of the condition At the 35th week the presenting head was high, and pus and albumin appeared in the urine This onset of urinary infection was not surprising in view of her previous attack of pyelitis in the puerperium and the well-known likelihood of its recurrence She was admitted to hospital for treatment but was fairly well except for occasional headache, a slight rise in blood pressure (150/80), and a little œdema She received treatment with urinary antiseptics, low protein diet, &c, but the albuminuria and pyuria persisted to some extent until the onset of labour

Labour began on March 14th, 1936, and after twelve hours the cervix was three fingers' dilated and drawn up, the membranes having ruptured, the presenting head was above a very obvious cystic swelling The patient's temperature then suddenly rose to 100 6° F, and her pulse rate became rapid (118) Dr A A. Gemmell saw the patient at this time, and agreed that Cæsarean section must be done

A lower segment operation was performed under spinal anæsthesia However, instead of opening the uterus before exploring the pelvis—as on the first occasion—a hand was passed down to the left of the head, and a very obvious retroperitoneal tumour was discovered about the size of a Jaffa orange A living male child (6 lb 2 oz) was delivered by the usual technique, and, having sutured the uterus, the operator proceeded to investigate the tumour more fully To his surprise it had once again disappeared However, on very careful palpation an indefinite soft mass—partly fluctuant—was discovered running down beside the pelvic colon He realised the risk of hæmorrhage in attempting to deal with pelvic tumours at the time of Cæsarean section, but in view of the temperature decided that further exploration was necessary There was no true broad ligament on the left side, but the peritoneum was incised and dissection carried out by finger only When the tumour was reached it was easily separated from its connexions Just before its removal was complete it burst and very offensive yellowish fluid escaped Care was taken to avoid clamping or cutting, since it was obvious the ureter must be very close At one stage a strand of tissue appeared, and in view of the possibility of its being the ureter, it was examined closely between two fingers during this process it broke, and the surgeon became quite certain that it could not be the ureter, which is usually resistant At no time was a single vessel of any size seen nor was any bleeding point ligated

The tumour having been removed there was now a cavity extending retroperitoneally down to within two inches of the perineum This repeatedly filled with blood which oozed from all sides No attempt to find bleeding points was made, but the cavity was at once packed with ten yards of 12 inch gauze The abdomen was closed with tube drainage, and the patient left the theatre in good condition. Convalescence was a little stormy and the patient suffered from some distension. The chief difficulty was the removal of the gauze, which had two knots in it, but it was gradually taken out within 48 hours—gas-and air analgesia being used *for the removal* of each portion The wound broke down partly, but the lochia remained inoffensive The temperature was never higher than 101 5° F, and by the 18th day the wound was almost healed, the temperature and pulse rate were normal, and the patient feeling well She was discharged from hospital on the 40th day

Before the tumour was opened it was fixed in formalin. It was examined carefully 48 hours after operation, and turned out to be a kidney All renal tissue had been destroyed, and it had been converted into a pyonephrosis however, its shape and histological appearance made the diagnosis certain The strand of tissue which broke was in reality, an atrophied ureter In view of the diagnosis a self retaining catheter was kept in the bladder for a week *but there was never any discharge of urine* from the abdominal wound

The solution of the mystery was now clear The true pelvic kidney was small enough to allow spontaneous parturition until it became hydronephrotic. At the time of the first Cæsarean section the hydronephrosis collapsed during the delivery of the fœtal head—and the cyst, therefore, seemed to disappear By the time of the second Cæsarean section a pyonephrosis had formed, even then it partially collapsed during delivery of the head, and if the tumour had not been investigated before incision of the uterus it might have escaped notice for a second time

Prof HENRY BRIGGS said that an interesting feature of the case was the association of pelvic kidney and unicornuate uterus, the pelvic kidney being on the side of the missing horn —Prof. MILES PHILLIPS (Sheffield) had encountered two similar cases, in one of which the hydronephrotic kidney had been pushed up and labour had been completed by natural forces The other had been treated by Cæsarean section

The PRESIDENT gave an address on Midwifery Customs, Past and Present

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FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION —A special course in preparation for the F R C S (primary) examination will be given at the Infants Hospital, Vincent square, S W, on Mondays Wednesdays, and Fridays, from Feb 22nd to May 24th Dr Michael Kremer will take the physiology class at 5 15 P M, and Mr David Levi will take the anatomy class at 6 30 P M. An intensive course in gynæcology will be given at the Chelsea Hospital for Women from Feb 8th to 20th, while a course in medicine, surgery, and gynæcology will be given at the Royal Waterloo Hospital from Feb 22nd to March 6th A week end course in children's diseases will be given at the Princess Elizabeth of York Hospital on Feb 20th and 21st Clinical and pathological courses for M R C P candidates will be held at the National Temperance Hospital on Tuesdays and Thursdays, at 8 P M, Feb 16th to March 4th There will also be courses in chest diseases at the Brompton Hospital (5 P M, twice weekly Feb 22nd to March 20th), in heart and lung diseases, Royal Chest Hospital (on Mondays, Wednesdays, and Fridays at 8 P M March 1st to 20th), in neurology at the West End Hospital for Nervous Diseases (every afternoon, March 8th to 20th)

REVIEWS AND NOTICES OF BOOKS

Surgical Note-taking

Second edition By CHARLES F M SAINT C.B E M D M.S F R.C S Eng Professor of Surgery University of Cape Town. London: H K. Lewis and Co Ltd. 1937 Pp 91 3s

THE ability to write concise and pertinent notes on clinical cases is a fair criterion of a sound surgical training Such an accomplishment is attained mainly by working out an original system of note taking from individual experience but systems devised by others may be useful either by providing a standard of comparison and a fund from which to draw ideas, or (less desirably) by being adopted in toto Mr Saint offers to surgical dressers and clerks commencing clinical studies a system which may be used in any of these ways according to taste. After some observations on surgical dressing he briefly discusses the taking of notes in general, and then elaborates a series of schemes for taking notes on various types of cases such as injuries appendicitis diseases of the tongue each illustrated by an example The schemes on the whole are clear and complete; they contain many useful points but some are perhaps too detailed Those for abdominal emergencies and fractures are the best. There are one or two omissions of some importance in the case of head injuries no place is given to the taking of a statement by an eye witness and in the article on jaundice there is no mention of the urine

The book should be of value not only to the beginners for whom it is written but also to those about to take their qualifying examinations who will find in it a quick and convenient way to remind themselves of the points to be kept before them when examining their clinical cases

Elementary Pathology

An Introduction to the Process of Disease By KEITH S THOMPSON Pathologist Selly Oak Hospital Birmingham; formerly Lecturer in the Department of Pathology University of Birmingham and Pathologist Queen's Hospital Birmingham London: H K Lewis and Co Ltd 1936 Pp 74 10s 6d.

IN the course of teaching Dr Thompson has realised that the conventional system of note-taking during lectures leaves much to be desired The notes taken are frequently incomplete and sometimes even inaccurate whilst the time devoted to writing would often have been much better employed simply listening to the lecture Yet notes or their equivalent cannot be entirely abandoned The student in his fourth year is faced with a subject which is entirely new to him and of which he does not even understand the elementary nomenclature he feels the need of notes even if it is little more than a dictionary of terms Realising this difficulty Dr Thompson has endeavoured to overcome it by producing a book which is virtually an ideal set of notes It is interleaved with blank pages for further points or illustrative examples In its lay out the book covers the field of general pathology in a conventional manner and it could be easily adapted to meet any ordinary course of pathological lectures

The thirty two figures with which the book is illustrated deserve mention They mostly consist of full quarto pages showing a large field under low magnification This method gives the reader an excellent idea of the general architecture of the lesion The reproduction too is excellent but in one or two cases the choice of subject might have been better—e g to illustrate nutritional diseases of bone by rickets rather than by scurvy In the text there is a tendency to sacrifice strict accuracy to simplicity of expression This is seen in such statements as macrophages do not touch bacteria or that benign tumours are of normal structure but overgrown The processes of inflammation are considered too much as a conscious effort on the part of the body These are minor points which do not seriously detract from the value of the volume as an introduction

History of Chinese Medicine

Second edition By Dr K C WONG late Lecturer on Medical History National Central University; and Dr WU LIEN TEH M D Camb Director National Quarantine Service National Quarantine Service, Shanghai. 1936 Pp 906 £1 10s

THE first edition of this voluminous book was reviewed at length in our columns on its appearance four years ago (vide THE LANCET 1932 2 1337) and the general scheme remains the same but the contents have been subjected to close revision This has been a heavy task as the whole range of Chinese medical history is covered by the indefatigable authors—i.e a period of over 4600 years

The new edition like its predecessor is divided into two parts: for the first which is mainly historical Dr Chimin Wong is responsible while the second part is from the pen of Dr Wu Lien Teh The first part is divided into a legendary period (2697–1122 B C) a historical golden period (1120–960) and a mediæval period covering the next 1000 years This section has been largely rewritten as well as expanded the interesting chapters on the decline of native practice and on the struggle between the new and old forces being entirely new Such authentic records as are extant concerning Chinese medicine were studied and collated for the production of the original issue, and apart from some weeding out we have them again in this edition but the elaborate nature of Dr Wong's studies is easier to follow now that the evolution and development of the indigenous art is described in fuller shape But in the second part which treats of the introduction and progress of modern medicine we have a complete revision of the previous material whilst the events of the last eight years are described in a separate section recording the consolidation of medical work under Government auspices

Dr Lien Teh depicts the salient features of progress introduced by the early Catholic missionaries and finds that developments throughout the seventeenth and eighteenth centuries were largely due to their influence He then in considerable detail deals with the later work of the Protestant missionaries in the nineteenth century and shows how toward the end of the Manchurian dynasty a gradual adoption of European methods became systematised A full chronological table affixed to the second part enables us to ascertain at a glance the practical directions in which advances have been made and indicates the trying conditions under which progress has had to take place For example in an attack by the

Japanese Army by aerial and naval forces upon districts near Shanghai, there resulted the destruction of many medical institutions and the killing and wounding of thousands of civilians Excellent relief work was started by *foreign* medical institutions, and new hospitals were opened to deal with the situation Then came the widespread cholera epidemic which marked the end of 1932, while in that year and in the following year there were epidemics of cholera and small pox, and finally, serious outbreaks of plague in several districts These disastrous occurrences, according to Dr Lien Teh, caused no set-back to medical activities, but, on the contrary, they stimulated the Chinese to greater exertions, and the record of recent work up till the present day is one of great performance A national bureau for the control of narcotic drugs has been established, hospitals for drug addicts have been started, a midwifery school has been opened at Hankow, and similar schools have been established at other centres, a national quarantine service has taken over the Canton and Swatow stations—and many other examples of practical progress in the last three years might be cited

Dr Wu Lien Teh and Dr Wong deserve the highest credit for bringing the story of medicine in China up to date , it has been a task requiring great industry and discrimination, and the result of their labours should be of real value to their country by enhancing its scientific position

Manual of Practical Anatomy

By THOMAS WALMSLEY, Professor of Anatomy in the Queen's University of Belfast Part III the Head and Neck London Longmans, Green and Co , Ltd *1936 Pp 357 12s 6d*

THIS is a new edition of the third part of a manual which made its appearance some fourteen years ago, and had a second issue ten years later The present edition shows an increase in size resulting from the introduction of "fuller descriptions of the examination of the living body and stressing the parts which are important in clinical practice" This attempt on the part of the author to meet some of the criticism of anatomical teaching to medical students is praiseworthy, and he is to be complimented on the way in which he has carried out his intentions It is his bad fortune that he cannot correct the clinical ignorance which is at the bottom of much of the criticism This issue is a worthy successor and companion to those parts which have already appeared and have established their position among the practical manuals of anatomy

Recreational Therapy for the Mentally Ill

By JOHN EISELE DAVIS, B.A , M.A , *in collaboration* with WILLIAM RUSH DUNTON, Jr, M D London William Heinemann Ltd 1936 Pp 206 15s

THE aim of this valuable work is to offer a systematic basis and procedure for forms of treatment that are now often neglected or used haphazard The competence of the authors is beyond question —one a physician foremost in this field, the other a physical director at Perry Point, Maryland, with an unrivalled experience acquired in the treatment of ex Service 'veterans" The untiring therapeutic effort which is characteristic of American psychiatry is very plain in this practical handbook, theory is expounded in it too, but for the most part the book is concerned with the actual procedures and working problems There could scarcely be a better corrective for the belief that apart from psychotherapy there is no active treatment for mental disorder The authors define *recreational* therapy as any free, voluntary, and expressive activity, whether motor, sensory, or mental, which is vitalised by the expansive play spirit, sustained by deep rooted pleasurable attitudes and evoked by wholesome emotional release, it is prescribed by the physician, to whom the trained recreational and occupational therapists are technical assistants and advisers In the discussion of general principles and classification, as well as in the description of actual treatment, tests, objectives, and schedules for training personnel, the authors avoid the temptation to elaborate or digress so that readers who make allowance for the novelty of the subject, and the somewhat different conditions in the United States from those prevailing here, will find this work very serviceable

Manual of Blood Morphology

By LYDIA SCHUDEL Leipzig Georg Thieme 1936 Pp 45 R M 6 80

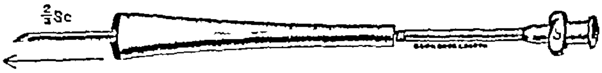
THE writer of this little manual is senior technician in Prof Naegeli's laboratory at Zurich. The technique of making platelet counts, of making cover slip preparations, and of staining them by the May Grünwald technique is described There are thirteen good colour plates illustrating the development of the blood cells and the characteristic picture found in different blood disorders No reference is made to any view concerning blood-cell origins except that taught by Prof Naegeli, which is by no means universally accepted The letterpress is in German, English, and French The book has value for the hæmatologist, but is perhaps over dogmatic for the student

NEW INVENTIONS

A NEW INSTRUMENT FOR DRAINING QUINSIES

I HAVE used on numerous occasions the following method of draining quinsies with a syringe and an adjustable guarded needle I have found it simple, practically painless, and much less alarming to the patient than the usual incision with a guarded scalpel, and it gives immediate relief

The needle is of stainless steel, 4½ in long and 1 6 mm in diameter, with an adjustable guard The needle can be fixed to an ordinary Record syringe I prefer to use a 2 c cm syringe with ring grips similar to the one used for hæmorrhoid injection



The patient is placed in a sitting position in a good light and the needle is inserted into the most dependant part of the abscess to aspirate the pus

The needle was made for me by Messrs Down Bros , Ltd., 22A, Cavendish square, W 1

J T RICE EDWARDS, F R C S Edin.
Assistant Surgeon to the Royal Gwent Hospital, Newport

THE LANCET

LONDON: SATURDAY JANUARY 30 1937

RHEUMATOID ARTHRITIS A MOVE ON

In an address to the Institute of Hygiene last spring Dr Fortescue Fox recalled his experience when he left a house appointment at the London Hospital for a rheumatic spa in the north of Scotland and was astonished to find that many of the victims of arthritis were young women and girls As parish medical officer he was soon led to associate this painful and terribly crippling disease with residence in ill lighted crofters cottages and bothies It was actually twenty five years earlier than this that Alfred Garrod had accurately described the disease and given it the name of rheumatoid arthritis The differentiation between it and osteo arthritis was clearly defined by Sir William Hale-White and others and in all countries the belief has been gaining ground that in the rheumatoid arthritis of the young we are dealing with a specific infective disease Its rapid onset especially in adolescents with profound constitutional disturbance and destruction of tissues all point to a special or specific poison probably allied to although distinct from the rheumatic fever which invades a different set of tissues and often attacks the heart muscle But in spite of the growth of knowledge for most of these decades as Dr Ralph Pemberton once remarked this disease has been regarded with relative indifference by the medical profession and to this reason Lord Horder has no doubt rightly ascribed the fact that the treatment offered has been all manner of pseudo-science It was undoubtedly the reports made to the Ministry of Health by Dr Alison Glover in 1924 and 1928 that first opened medical eyes to the general importance of this form of rheumatoid arthritis in women and to its devastating economic results At ages between 25 to 34 years it is known that six times as many insured women as insured men are invalided from work and these figures of course do not include the delicate girls who are unable to work at all nor the housewives occupied at home There is an unhappy predilection of the disease for northern climates such as our own and some continental writers have called it the British arthritis And it is now all too clear that it is the younger women of child bearing age who are the main sufferers and that the treatment which is at present available does not rescue them from the steady progression of the disease to a state of more or less complete crippledom

It may be that we have to deal here with a disease whose progress on a certain kind of soil is inevitable or which is little amenable to remedies of any kind, and as long as the therapeutic armoury includes only baths and potions there may be no more success than some relief of the most prominent symptoms But those who have not forgotten the story of tuberculosis may recall that it was not until the symptomatic treatment gave place to a direct attack on improving the bodily resistance that hope first began to dawn It was in a relatively damp and sunless valley of the Black Forest that Otto Walther demonstrated to an incredulous world what could be done by hardening the body and increasing its natural resources against the onslaught of tubercle No one can claim for Nordrach a monopoly of climatic advantage or of clinical knowledge but it is a fact that from that venture of faith arose the proselytes who initiated the modern campaign against tuberculosis Dr Fox would have us do something of the same kind for rheumatoid arthritis In a postscript to his republished and extended lecture[1] he urges that special provision should be made for the main sufferers from rheumatoid arthritis in the form of Rest Houses. These young women are anæmic feeble languid always more or less in pain easily tired easily chilled their joints inflamed their muscles rapidly wasting They need he feels sure a prolonged special rest cure Such a Rest House would provide a combination of curative methods within its own bounds adequate physical treatment would be available, but only as an adjuvant to the fundamental period of three to six months rest under medical supervision

The direction of such a Rest House would give opportunity for investigating the disturbances of function which recent observers believe to be at the root of rheumatoid disease Here too would be place for a systematic study of body heat and of the skin and circulation with especial reference to the effects of cold for once these patients can be brought to a condition in which they again respond to the normal stimuli of our winter and spring climate half the battle would be won Dr Fox himself attaches value to the use of pure sulphur waters in the treatment and such waters are not available nearer than Wales Ireland or the north of Scotland But the practical value of an object lesson is much diminished by remoteness and we have an impression that his suggestion of Southend-on-Sea as a locality for such a Rest House is a wise one The climate there is suitable for treatment at all seasons of the year and the estuary mud unattractive as it may be in other respects makes excellent soothing baths In the Thames basin too it should be easy to secure the sympathetic interest of public-spirited people prepared to make the venture a success The proposal is not of course unique If Prof Davidson has his way—as our Scottish correspondent reported last week—something on similar lines might come into being in Aberdeen

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[1] Arthritis in Women: A Clinical Survey By R Fortescue Fox M D F R C P President of the International League against Rheumatism London: H K Lewis and Co Ltd [illegible] Pp 33 [illegible] 6d

THE IMMUNISING ANTIGENS OF BACTERIA

FROM the beginnings of bacteriology attempts were made to determine the cell-constituents of pathogenic bacteria The early work was hampered, not so much by inadequate chemical or bacteriological technique, as by lack of a definite objective By suitable treatment of large quantities of dead bacteria a number of more or less definite chemical substances were obtained , but their interest was chiefly intrinsic, and there was little to indicate which of them gave rise to morbid effects With the realisation that bacterial species are not necessarily fixed but undergo spontaneous or induced changes in their properties, chemical analysis had a definite question to answer What, for example, did PASTEUR's "attenuated" anthrax bacillus lack that endowed the natural anthrax bacillus with its virulence ? The occurrence of variants of a bacterial species morphologically different from their parents presented a related problem—the chemical constitution of the particular anatomical feature present in one form and not in the other There are few easily observed morphological changes in bacteria, but they include the loss or acquisition of a capsule, and the loss of flagella The capsulated pneumococcus was the first bacterium to be analysed in detail by chemical methods This coccus can occur in a non-capsulated form which is relatively avirulent, and by comparative analyses of the two forms the capsular substance was found to be a complex carbohydrate, the now familiar specific polysaccharide Each of the virulent pneumococcal "types" differs from the other types by reason of the differing chemical structure of, among other things, these polysaccharides , and to a certain extent the behaviour of the pneumococcus in the host can be described in terms of the specific polysaccharide substance There were, however, certain discrepancies between the properties of the polysaccharides isolated and those of similar substances present in the body fluids of the pneumococcus infected host It has lately been demonstrated[1] that the relatively brutal chemical procedures to which the pneumococci were subjected during chemical fractionation removed from the polysaccharide molecule the acetyl groups, leaving a substance still capable of reacting with antipneumococcal sera, and still determining the type-specificity of the organism Acetylation of this substance confers upon it important immunising properties, and it appears that the polysaccharide is present in the acetylated form in the pneumococcus The serological study of the de acetylated polysaccharide has been particularly fruitful, but our understanding of antipneumococcal immunity was certainly delayed because the criterion of importance adopted for the isolated substances was primarily an in-vitro serological one

Flagellated bacteria (the so called "H" forms) of the colon typhoid group exemplify the other main morphological variation, often throwing variants without flagella (the so called "O" forms) The flagella contain powerful antigens responsible for making a patient's serum positive in a Widal test, but they play a minor part only in producing disease and in stimulating immunity The O antigens, in the body of the bacteria, are of prime immunological importance Like the capsular antigens of the pneumococcus, they may be lost by the bacilli in certain circumstances, and the resulting variants are feebly virulent and poor in immunising power The adequacy of the virulent O form for the manufacture of effective vaccines was questioned by FELIX,[2] who described a new serological variant in freshly isolated, living typhoid bacilli The variants are more virulent and better immunising agents than the accepted typhoid strains, and FELIX named the hypothetical substance responsible for their peculiar properties the "Vi," or Virulence, antigen This antigen is destroyed by mild heating and by the action of certain chemical preservatives used in the manufacture of vaccines Antisera produced by horses immunised with a Vi strain are claimed by FELIX and his co workers to be effective agents in the treatment of enteric fever

It is obviously important that the nature of an apparently powerful immunising agent like the Vi antigen should be determined The antigen is recognisable serologically, but the example of the de acetylated pneumococcus polysaccharide is a warning against the common fallacy of arguing from a serological to an immunological entity. A purified end product of chemical fractionation may be precipitated by an immune serum as effectively as a crude watery extract of the bacterium so treated, but this fact is no guarantee that the precipitated substance has remained unchanged during the process The ultimate isolation of an immunising substance is most safely achieved by rigid tests of all products for actual immunising power This method was adopted by Prof TOPLEY and Prof RAISTRICK and their colleagues in their isolation of the antigens of *Bacterium typhi murium* and has been applied to their study of the Vi antigens of the typhoid bacilli published in our present issue The immunising fraction of *typhi murium* survived tryptic digestion of acetone extracted bacteria, and could be precipitated from the tryptic digests The typhoid antigens are apparently similar, and analysis, on these lines, of a Vi strain and an ordinarily virulent O form of the typhoid bacillus reveal definite and significant differences in the immunising and chemical behaviour between comparable fractions of the two strains The most powerful immunising antigen is derived from the Vi strains, but the O antigens are far from ineffective in this respect, for repeated injections of the O antigen are as effective as two injections of the Vi antigen in protecting the mouse from lethal doses of living typhoid bacilli Though Vi forms are probably the best immunising agents, the O forms hitherto employed in the preparation of vaccines have a definite efficacy of their own

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[1] Avery O T and Goebel, W F (1933) *J exp Med* 58 731

[2] See references given by Topley and others (p 256) of our present issue

Though the results so far obtained are sufficiently clear cut, the exact nature of the antigens remains to be determined. The work is far from easy; one of the chief difficulties lies in the choice of suitable chemical methods of isolation. It is instructive in this respect to compare the methods used for the typhoid bacilli with those used by Dr STAMP and Miss HENDRY for the isolation of immunising fractions of hæmolytic streptococci (see p. 257). The typhoid fractions are polysaccharides linked on to other molecules, whereas the active streptococcal fractions appear to be protein in nature, and the dissimilarity illustrates the laborious and groping methods of analysis that are needed for each fresh bacterium tackled. Both papers raise a point of immediate interest—the isolation of relatively pure stable substances capable of inducing good antibacterial immunity. The ease of manufacture and the effectiveness of streptococcal antitoxin has overshadowed the possible value of antibacterial sera. But in view of the doubts of the efficacy of streptococcal antitoxins expressed, for example, in the report of L. COLEBROOK[2] the problem of attacking the infecting cocci themselves as well as the exotoxins they produce becomes more urgent. The hæmolytic streptococci are divisible by the precipitin reaction of Lancefield into a number of subgroups each antigenically distinct. Dr STAMP and Miss HENDRY, in obtaining effective fractions from a streptococcus belonging to Lancefield's human pathogenic group A and from a cattle pathogenic strain of her group C, have made a beginning of the immunological analysis of this highly complex group.

One more point deserves mention. Successful isolation depends on adequate assay of the products, and here the difficulties are more economic than technical. A dependable estimate of the immunising property of a single fraction uses, if the test is to be adequately controlled, sixty mice. A complete survey of all the fractions from a bacterial analysis may require prohibitive numbers of animals. But without the foundation of the statistically significant results that follow the use of adequate numbers of test animals very little of value can come out of immunological experiments except by happy but scarcely dependable chance.

SIR HENRY WELLCOME'S WILL

PARTICULARS of the will of the late Sir Henry Wellcome were published in September last when the gross value of the estate was declared, but some time must elapse before the exact sum in death duties will be arrived at. Specific bequests were considerable, while in respect of the rest there was an appointment of trustees, the terms of which are set out by them in a letter which appears this week in our columns. The trustees here explain why they have been unable to consider appeals for contributions which have arisen from various research undertakings, received as a natural sequence to the general knowledge concerning the directions in which the bulk of the fortune was to be used.

The letter from the trustees is so detailed and clear as to leave no need for exposition. By the terms of the will the shares of the Wellcome Foundation, the company formed to take over the whole of the business activities of Burroughs Wellcome and Co., became vested in trustees, while provisions have been made for a welfare fund for the benefit of employees of the Foundation, for the payment of certain specified annuities, and for the erection and maintenance of a memorial building to the testator's parents. The Foundation includes the various institutions and museums which were established by Sir Henry Wellcome, who held the whole of the share capital, and this is now vested in the trustees in accordance with the testator's instructions. Subject to the charges mentioned above the remainder of the disposable profits of the Foundation were by the terms of the will to be employed for the maintenance of two funds—the Research Undertaking Charity and the Museum and Library Charity. The scope of these funds is set out in the letter of the trustees, and we have presented to us a concrete conception of the mighty influence which well-directed scientific research can have upon world conditions. Thus the responsibility placed upon the trustees is a truly heavy one, and its discharge will call for great knowledge of the directions which medical progress may take and proportionate judgment in the disposal of large sums of money. The trustees are Mr G. Hudson Lyall and Mr L. C. Bullock, members of a city firm of solicitors, Mr Martin Price, a chartered accountant, Sir Henry Dale, F.R.S., and Prof. T. R. Elliott, F.R.S. The testament imposed upon the trustees an obligation to enter into a covenant not to be engaged in, or in any way to assist in, any business competing with the Burroughs Wellcome company, and the scientific and medical trustees, Sir Henry Dale and Prof. Elliott, might be placed in a difficulty if certain words in the covenant were held to restrict their performance of official or general duties towards medical science, or to imply their particular concern with the business interests of the Wellcome Foundation. Wisely, therefore, legal advice was sought to make clear the position, and appended to the letter of the trustees will be found a copy of an Order obtained from the High Court of Justice dealing with the situation.

The endowment for the benefit of mankind designed and made possible by Sir Henry Wellcome's will is remarkable not only for its generosity but for its foresight. The terms are sufficiently precise to enable the testator's objects to be realised, while those objects contemplate an indefinite development within broadly specified lines.

THE death occurred on Saturday last of Dr. Henry Alexander Osborn, a well known pathologist working in Liverpool. The tragedy occurred through an infection contracted in the course of his work. He was only 43 years of age.

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[2] Colebrook, L. (1936) *Lancet*, 2, 1341; (1937) 1, 108.

ANNOTATIONS

KING GEORGE V MEMORIAL

ONE evening last week an appeal was broadcast by Lord Dawson of Penn on behalf of the King George National Memorial Fund for the provision of playing fields throughout the country Lord Dawson made a moving reference to the closing scenes of the life of King George V, emphasising his resolute performance of duties during declining health, and his deep concern for his people The object of the Memorial must commend itself to all medical men as being devised for the well being of youth King George, said Lord Dawson, saw clearly that the future prosperity of the country lay with youth, and subscribed to this vision by adding that "as time goes on it will be found that the school which teaches health, the hospital which restores health, and the open spaces which make for health are all part of one great conception" Lord Dawson's appeal was made on the last day of the Odd Shillings and Pence Appeal, but this does not mean that the appeal as a whole is closed, an impression which it is hoped our readers will not allow their patients and friends to remain under Contributions to the fund should be sent to the Lord Mayor of London at the Mansion House

THE TREND OF THERAPEUTICS

IT is notoriously difficult to write contemporary history, yet we are ever striving to assess the value of our own contribution to the story of mankind. Those who try to see present events impartially and in proper perspective are, consciously or unconsciously, making the difficult experiment of transporting themselves into the next century, and viewing the present through the eyes of a future generation Too often, we feel, such adventurers deserve little sympathy, but in medicine their function is obvious and important It is not only interesting, but vital, that growing points should be recognised and nourished. To day we are on the threshold of developments in medicine which may parallel those of surgery during the last seventy five years The recent rapid progress in the field of endocrinology has furnished the occasion for some of the finest chemical work of the century, and the chemists are no longer technicians only, but pioneers The discovery of the constitution of a hormone is a major event, and its successful synthesis hardly less so, but the research worker does not now retire at this stage in favour of the manufacturer and the clinician The hormone may contain two or more well known chemical groupings of elements, and it is important to know which of these is responsible for the characteristic effect More important still is the fact that each of these groupings relates the substance to a whole family of other compounds, natural or synthetic, all containing different modifications of the same nucleus The various relatives of adrenaline, such as ephedrine and benzedrine, and the family of œstrogenic compounds are familiar examples of this Their clinical importance lies in the probability that different members of the series will be found adapted to different circumstances in treatment We use adrenaline in asthma as an emergency measure, but ephedrine for a prolonged effect

We have long been familiar with the same principle in the pharmacology of the nitrites, but much more complicated drugs are now being subjected to the same kind of scrutiny and experiment Our breakfast literature bears witness to the zealous search for the perfect drug, and its chemical name, formidable in its lack of hyphens, means that it is not an accidental discovery, but a carefully thought out product which the manufacturer would have us believe is eugenically perfect Usually he either overrates or underrates our intelligence, but he faithfully mirrors the modern emphasis on the relation between chemical structure and biological activity Why this should coincide with a decline in the importance of pharmacology in the medical curriculum is difficult to understand

On another page are reports by Mr J S Maxwell and Dr Chassar Moir on the clinical trial of carbaminoylcholine Even H G Wells might have paused before predicting a pharmacological substitute for the catheter, yet here we find evidence that, so far as post operative and post partum retention are concerned, such a substitute has been found Sir Henry Dale and Prof Otto Loewi have lately received the Nobel prize for their researches into the physiological importance of acetylcholine in transmitting the effects of nerve impulses The control and innervation of the bladder have had much attention from research workers in recent years, both in this country and in America For many years the family of compounds to which acetylcholine belongs has been the subject of chemical and pharmacological investigation In the trial of carbaminoylcholine in the treatment of retention of urine we have an experiment based on straightforward deduction from facts which have been largely established in the laboratory It is, perhaps, a coincidence that the same series of physiological researches formed the basis of a similar experiment in the trial of Prostigmin for myasthenia gravis, but there can be little doubt that we are destined to become increasingly familiar with such experimentation We are daily amassing more and more precise information about the actions and chemistry of hormones, drugs, vitamins, and other highly potent substances, such as acetylcholine, produced locally in the body Precision of knowledge means precision in treatment, and precision in treatment will do more than many conferences to simplify the medical curriculum

THE CANCER VIRUS

A SINGULARLY clear paper by Dr C Russell Amies from the Lister Institute in the January issue of the *Journal of Pathology and Bacteriology* goes far to confirm and clarify the work of Ledingham and Gye on the particulate nature of the active agent in bird tumours Tumour extracts ground with sand and finally frozen and thawed several times to kill any cells which might survive, contain a heterogeneous collection of particles Moderate centrifugalisation removes most of this debris and leaves the infectivity of the supernatant liquid unimpaired If this liquid is then centrifuged more violently—e g, 12,000 revolutions per minute for 2 hours or 33,000 for half an hour—the whole of the infective agent is thrown to the bottom of the tube and the supernatant fluid is innocuous though it still contains fine particles visible by dark ground illumination That the agent is particulate is not new, but these experiments show that infectivity is associated with particles of a certain size and that when these are emulsified in liquid and tested on fowls they represent the whole of the infectivity of the original extract Microscopically these preparations contain a great number of particles of approximately the same size and of similar optical appearance they are too small to be seen clearly but their appearance would be compatible with their being about 0 1μ in diameter which is in reasonable correspondence with the size determined by Andrewes and Elford by filtration and centrifugalisation. The number of particles in a suspension was not determined but Amies makes the point that it was obviously greatly in excess of the number required on the assumption that one particle could start a tumour—which suggests that none of these very small bodies can do anything unless there are many of them the unit of action may well be a crowd rather than an individual. If these particles are not the actual tumour virus the tumour exciting property evidently resides in and cannot be dissociated from them The suspensions are agglutinated by the serum of most fowls carrying tumours and of some normal fowls though not by the serum of chickens, a result which by itself might be due to the particles being the result rather than the cause of the disease they show however they can hardly be normal fowl tissue Agglutinating sera generally also have the power of neutralising the infectivity of suspensions if the two are allowed to react together for a few hours before being inoculated into the test hen Suspensions are not agglutinated by antifowl serum made by dosing rabbits with fowl blood which is the best available evidence that they do not contain fowl protein But in a series of striking experiments previously made in a cruder way by Gye and Purdy Dr Amies shows that this antifowl serum will neutralise the infectivity of his purified emulsions and draws the natural deduction that the tumour agent contains something which is normally present in fowl tissue This is difficult to reconcile with the view that the tumour virus is an independent organism unless it is a parasite which in some curious way takes on a stamp from its host

TRANSURETHRAL OPERATIONS

DURING the past five years the great value of transurethral operations for the relief of various disorders of the bladder urethra and prostate has become apparent for they can now be employed in many cases in which open surgical operations were formerly required Elderly patients who because of the risk involved declined to submit to other types of operation are now reporting to the urologist for the transurethral operation and are being relieved of symptoms with minimal risk. Although resection of the prostate gland for enlargment is by far the commonest of these procedures, it is by no means the only one. Extensive tumours of the bladder that previously called for open excision can be tackled with a McCarthy resectotome the bulk of the growth being rapidly removed with a cutting current and the pedicle or base afterwards thoroughly destroyed by electrocoagulation In a review of the subject Dr G J Thompson of the Mayo Clinic claims [1] also that the scope of litholapaxy as opposed to suprapubic removal has been greatly increased In his opinion prostatic enlargement is no contra indication to the use of the lithotrite and he is in the habit of treating both conditions at one sitting crushing the stone and then dealing with the enlargement by means of an electrotome. Other conditions in which the electrotome will be found useful are prostatic calculi prostatitis and prostatic abscesses both *acute* and chronic Even vesical dysfunction due to a *lesion* of the central nervous system may yield to the division of the internal sphincter by means either of a McCarthy instrument or of a Collings s knife For the results of resection for prostatic obstruction Dr Thompson gives very impressive figures Of 1987 patients subjected to transurethral *resection* for either benign or malignant disease of the prostate during the four years 1932–35 only 14 died a mortality *of* 0 7 *per cent*

HISTORY OF BUBONIC PLAGUE IN PARIS

A FAMOUS mystery story had as its plot the disappearance of an Englishwoman during the night after her arrival, in company with her daughter in Paris No trace of her existence could be found next day and her daughter's frantic protests met blank denials—from hotel staff police and finally from the highest *officials*—that she had ever arrived The solution it will be remembered was that the great Exposition of 1900 had just opened that the lady had died of bubonic plague and that news of this must at all costs be suppressed

Allegations of such official suppression if they ever existed outside fiction are effectively answered in an account by Dr E Joltrain [1] of the 138 bacteriologically confirmed cases of plague observed in Paris from 1917 to 1937 The last two years have been happily free and in fact there have been but 6 cases in all in the last ten years The first case—indeed so far as is known the first for almost three hundred years—was in December 1917 Gland puncture of a dying child admitted to the Bretonneau with axillary adenitis gave a microscopical picture typical of plague. No other fact and no other cases were discoverable and the observation remained a bacteriological curiosity until 1920 Then another similar case occurred but this time it was followed not only by full laboratory confirmation but also by the detection of a whole series of other cases all more or less directly in communication and all among rag picker families though in four separate districts These four foci in slum dwellings in Clichy Saint-Ouen Levallois, and Pantin continued to furnish cases throughout 1920 the total for the year being 106 notified 91 confirmed 37 fatal. There were only 3 deaths (6 per cent) among the 52 treated cases in most of which large doses (100–200 c cm) of the Pasteur Institute antiplague serum were given; but among the 39 untreated no less than 34 (87 per cent.) were fatal. By the end of 1920 the plague was beginning to abate and there were only 10 5 and 11 cases bacteriologically confirmed, in 1921 1922 and 1923 respectively Joltrain mentions that in 1920 there were almost as many with even higher mortality in Marseilles; but the history of Marseilles would require a chapter to itself It is sometimes forgotten that Paris too is a seaport and it is probable though the facts can now never be established that the infection was ship borne Joltrain says categorically that in 1917 plague rats escaped at Levallois from a ship bringing coal from England after a previous voyage to India. One may be permitted to doubt so elegant a sequence: in fact, no plague infected ship arrived in Cardiff in 1917 and though more than one arrived in the Thames in that year these were thoroughly fumigated before clearance and no plague rats were found a hore in the Port of London then or since That rat plague existed in Paris during the pre epidemic years of 1918–19 is, however, highly probable It was recalled, when inquiry was made, that dead rats had been found with abnormal frequency, and two of the first persons to get plague in 1920 had actually handled a sick rat and been bitten by its fleas Since then examination of rats for plague infection has been regular in Paris In 1921 7000 were examined by Tanon and Neveu in their special plague laboratory, these yielded 41 positives, in 1924, 2840 rats gave 50 positives, as late as 1933, 2770 rats gave 5 positives, and it is far from certain that rat plague does not still exist

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[1] *J Amer med. Ass.* 1936 107 1931

[1] *Bull. Acad. Méd. Paris* 1936, 114 631

Little new is to be learnt about the epidemiology of plague from the Paris observations The cycle is as usual rat→flea→man, and infestation of the rats by *Xenopsylla cheopis*, as well as the common rat flea, *Ceratophyllus fasciatus*, is noted by Joltrain The main lesson—and it is one that we in England should not scorn—is that the existence of rat infested slum dwellings in a city is a perpetual invitation to invasion by bubonic plague It is no doubt true, as Indian experience shows, that even when such plague infected slum foci exist, the disease will spread hardly, if at all, from them to quarters of proper sanitary construction But the mysterious penetrations of which rats are capable, even in urban districts so unfavourable to them as the City of London, would create enormous anxiety, nourished, as it would be, by sporadic cases of the dread disease in the most unexpected places, as happened indeed in Paris So no effort should be spared to reduce our rat population to a density low enough to prevent the spread of plague among them Our experience in East Anglia 25 years ago shows that such reduction will, in fact, extinguish a rodent enzoötic, though, it is true, that was under rural conditions, where dispersal of rats was easy Vigilance against introduction remains the best defence and the experience of Paris is a warning of the consequences of its failure

THE APPENDIX IN MEASLES

DISCUSSING appendicitis as a complication of the acute specific diseases, Ronaldson [1] finds that although some French writers attach importance to its supposed relationship to scarlet fever, the experience of several of the large fever hospitals in London shows that the association is rare He records two cases under his own observation, but discovers no demonstrable connexion between the patients' appendicitis and the scarlet fever from which they were convalescing Indeed, he suggests that the appendix, "the abdominal tonsil," seems to enjoy a high degree of immunity from the septic manifestations of the disease The possible association of appendix symptoms with measles is distinctly more interesting, for although suppurative appendicitis is very rare, Ronaldson says that transient pain in the iliac region may be a feature of the first day of the prodromal stage of measles, and surgical aid may thus be sought unnecessarily Wegelin [2] has just recorded three cases in which appendicectomy with uneventful recovery, was performed in children who developed acute appendicitis in the prodromal or earliest eruptive stage of measles, and in view of his remarks about the mildness of the inflammatory changes found on microscopical examination it seems possible that these were all examples of the appendicular colic alluded to by Ronaldson Both authors refer to the histological investigations of the tonsils in early measles carried out independently and almost concurrently by A S Warthin and W Finkeldey in 1931 These workers found characteristic giant cells in the tonsillar tissue and, in 1932, M. Herzberg demonstrated similar giant cells in the mucosa of the appendix removed from measles patients In all of Wegelin's cases identical giant cells were present in the lymphatic tissue of the appendix and in one of them they were found in the neighbouring mesenteric glands also Wegelin thinks that the occurrence of the Warthin Finkeldey giant cells is specific for measles and of diagnostic importance More practical, however, is Ronaldson's advice that appendicular symptoms in young subjects should lead to a search for Koplik's spots, whose discovery may obviate too hasty interference On the other hand Wegelin refers to a case recorded by Hathaway in which a boy in the prodromal stage of measles, infected by his sister, died from perforative appendicitis Histological examination revealed giant cells in the bronchial and retroperitoneal lymphatic glands and in the spleen, but not in the appendix or mesenteric lymphatic glands Unless the patient can be kept under constant observation, as in hospital, most practitioners, having diagnosed measles in a child who also presents symptoms pointing to appendicitis, will want to share their responsibility with a surgical colleague at the earliest moment possible.

EXACT KNOWLEDGE OF OUR COLONIES

"IT would scarcely be an exaggeration to say that the majority of English people of the present day have but the vaguest notions of the extent and resources of the Colonial Empire" Starting from this submission, Major P Granville Edge (lecturer in the division of epidemiology and vital statistics in the London School of Hygiene) in a paper read to the Royal Statistical Society at their meeting on Jan 19th set about the task of giving the statistician, at least, no excuse for his ignorance of the demography of the British Colonial possessions, a task most ably fulfilled These possessions, he said, comprise upwards of fifty distinct governments, have territories extending over an area of more than two million square miles, and a population of over 58 millions, or double the total inhabitants of Canada, Australia, New Zealand, and South Africa Rather more than nine tenths of this area and this population lies within the Tropics, and we have to deal with a "bewildering medley of races, religions, languages, and customs" Using the annual medical and sanitary reports of the different territories Major Edge discussed the rates of birth, death, infant mortality, and sickness which are recorded Such material must be handled with caution, for the difficulties under which medical officers concerned with native races have often to work lead to inevitable imperfections To take one example Major Edge refers to the "bad luck" belief which may cause native parents to omit any reference to the eldest surviving child. A husband with two wives and eight children reports seven offspring, the two wives interrogated about their own offspring report six, each deducting one, interrogated about each other's offspring they give the true number, eight

But such difficulties in the way of census taking and of registration, and the present difficulty—perhaps impossibility—of interpreting some of the figures obtained, must clearly not lead to a counsel of despair The road to accuracy may be long and troublesome but, however slowly it must be followed Only with a knowledge of the numbers and the constitution of a people can the machinery of government function properly and sanitary measures be taken only with a knowledge of vital statistical rates can the effects of such measures be assessed Those on the spot who take interest in these matters and make real attempts to collect the data need all the encouragement that can be given them and not as Dr Balfour Kirk remarked in the discussion following Major Edge's paper the damning with or without faint praise of their efforts by those accustomed to dealing with figures collected under the registration system of a civilised country It is also a serious mistake if the worker in the colonies is deterred from his vital statistical studies by to quote Dr Kirk's words the mathematical smoke screen with which he is faced when he consults the work of the professional statistician.

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[1] Ronaldson G W (1930) *Brit J Child Dis* 33 85
[2] Wegelin C (1937) *Schweiz med Wschr* 67 1

Much can be done under primitive conditions by simple statistical means by the careful and logical consideration of the figures collected But at present Prof. Greenwood suggested we regard our colonial vital statistics much less seriously than do the Dutch a difference which lies in Major Edge's view in the fact that in many of our possessions we are content to record the ascertained data, while the Dutch are concerned to interpret them—to get below the figures and to relate them to other recorded facts such as environmental conditions As the lecturer has suggested in another place [1] facts are stubborn things and often seem dull, yet they are the seeds of imaginative ideas which the wit of man is often able to transmute into practical realities There is no dearth of problems to solve if the interest is there to solve them Major Edge's paper should do much to arouse that interest and to create a more serious regard for medico statistical work amongst the native races in the British *possessions*

HEATED ETHER VAPOUR

IT has been claimed for a good many years that there is advantage in offering ether vapour to a patient warm rather than cold Shipway's widely used apparatus had this for one of its primary objects. It must be admitted, however that some have always maintained that the advantage is slight and counterbalanced by attendant disadvantages They have said that the vapour whatever its temperature when inhaled reaches blood heat before it enters the pulmonary alveoli and that the only value of warming it is to conserve the small amount of body heat expended in raising the vapour temperature to that of the body Even this gain they believe is more than offset by the increase of sweating associated with inhalation of warm vapour This argument takes no account of the newer possibilities of superheated ether vapour and in the light of Tiegel's observations [2] the question assumes new importance German authorities who have employed this vapour of a temperature much higher than that commonly used here declare that it is less irritating than ordinary ether vapour that it does not produce the same mucous secretion that it gives a prolonged analgesia both before and after true anæsthesia that it is very quickly recovered from and far less often followed by nausea or sickness Obviously these claims if substantiated mark a real advance The necessary apparatus is complicated and it will be of much practical benefit if the comparatively simple instrument used by Dr Garnet King of Los Angeles supplies a vapour of temperature high enough to have the virtues of Tiegel's method. King's Thermanester is we believe now to be obtained in this country and doubtless anæsthetists are trying the new version of warmed ether in order to determine its true value That it should be less irritating to the upper air passage and therefore more easily and comfortably inhaled than cool vapour seems on the face of it highly probable The pumping action of Shipway's apparatus may have impeded this effect during induction.

THE DISTRIBUTION OF STATE-REGISTERED NURSES

EACH year State registered nurses are sent official forms which they have to fill in and return with retention fees if they wish to keep their names on the register This year 72 059 nurses were circularised by the General Nursing Council for England and Wales and for the first time a questionnaire was issued with the forms in order to ascertain the distribution of State-registered nurses through the different branches of the profession Only 4002 less than 6 per cent failed to respond to the questionnaire and these were mostly nurses living abroad of the rest 55 956 were and 12 101 are not in active work. By far the largest group (27 190) are holding hospital appointments 16 381 are private nurses; 5029 are public health nurses (including industrial nurses) 4043 are district nurses and 1646 are taking further training These five groups account for nearly 54 000 women—none of the 24 *occupations* among which the remaining 2000 are distributed includes as many as 300 The very large proportion (approximately half) of State-registered nurses employed in institutions lends force to the plea made by THE LANCET Commission on Nursing for a greater measure of personal freedom for them when they are off duty There are still far too many hospitals in which qualified staff nurses are subjected to much the same restrictions as are appropriate for probationers, and this is certainly one of the factors influencing the shortage of suitable candidates for the profession.

USE OF THE DEVELOPING EGG IN VIRUS RESEARCH

THE inability of viruses to multiply apart from living cells has undoubtedly been one of the chief contributory factors to the difficulty of virus research The isolation of a virus and its maintenance in the laboratory has depended on the use of experimental animals and though the tissue culture technique more particularly in its simplified form devised by H B and M C Maitland [1] has been of great service in the study of viruses it has only replaced the living animal to a very limited extent This unavoidable reliance on the animals carries with it many disadvantages Some viruses causing disease in man such as those of zoster and varicella are apparently unable to infect other animals and so remain largely unstudied others like those of the common cold can only be transmitted to a species of animal which because of its expense must be used sparingly Even where a suitable experimental animal exists all sorts of pitfalls such as the presence of dormant viruses or the occurrence of cross infection exist to entrap the unwary or complicate the task of the experienced worker However the work done during the last four or five years on the suitability of the chorio allantoic membrane of the developing egg for the cultivation and study of viruses indicates a way out of many of these difficulties First used by Rous and Murphy in 1911[2] in the study of fowl tumours, the membrane was found by Goodpasture and Woodruff,[3] some twenty years later, to be admirably adapted to virus work Since then a number of virus workers have made use of this new technique, and of these one of the most successful and enthusiastic has been F M. Burnet While working in this country at the National Institute of Medical Research, and since his return to Australia, Dr Burnet, either alone or in collaboration with others, has published a series of papers indicating the scope of this new method He has now written a very valuable monograph on the subject which is published by the Medical Research Council[4] This report is not just a survey of published work, it contains many new observations and suggestions as to the possibilities of this method It must not be imagined, of course, that the egg membrane is available for use with all animal viruses, some viruses fail entirely to infect the chorio allantoic cells But it is quite surprising on reading this report to find how many viruses can be grown under these conditions It has even been possible by serial passage to adapt the virus of epidemic influenza to the egg membrane, and the possibility of using these undifferentiated cells in the study of viruses which it has been impossible to establish in experimental animals naturally occurs to one Quite apart from this the egg membrane constitutes an ideal "animal" for virus study It is very cheap, and requires the minimum of attention It is free from contaminating bacteria and viruses and cross infections do not occur Further the chorio allantoic membrane provides a beautifully simple tissue in which to study the histological reactions to virus infections There is not the least doubt that this new technique will be extensively adopted in virus research, and those workers contemplating its use will be grateful to Burnet for this lucid monograph.

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[1] Introd note 1 *Trop D Bull* October 1936 Suppl 11 1–6

[2] Tiegel M (1933) *Zbl Chir* 60 1911 61 2313 and 918

[1] Maitland H B and Maitland M C (192[illegible]) *Lancet* 2 [illegible]

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[2] Rous P and Murphy J B (1911) *J Amer med Ass* 56 741

[3] Woodruff A M, and Goodpasture E W (1931) *Amer J Path* 7 209

[4] Burnet F M *Spec Rep Ser Med Res Coun Lond* No 220 London H.M Stationery Office 1937 Pp 58 1s

HOME v RESTAURANT IN RUSSIA

IF people do not get the right food the reason may be that they cannot afford it, or do not choose it, or they may spoil good material before it reaches the table It has been noticed that those who live near the borderline of starvation are often unwilling to listen to advice about the choice and preparation of their meals, and this reluctance must be borne in mind by those who hold that if our population is to be better fed the steps most needful are educational rather than economic In a valuable report reviewed on p 293 Prof Cathcart and Mrs Murray reach conclusions supporting the opinion that what is wanted is not so much more food as more intelligent use of it Whether the data presented in the report suffice in themselves to justify such a conclusion may be questioned, but none can doubt at least that sound housekeeping is a very important element in sound nutrition The question is how to secure it, and this is one of the many questions which is now being answered in Soviet Russia differently from elsewhere The Russians in their particular circumstances despaired of efficient private housekeeping and from experiments in supplying canteen meals in time of scarcity they have passed on to the wide spread practice of "social feeding" It may seem a small matter whether people are fed at home or in restaurants, but after reading their clear account[1] of what is being done in the U S S R one sees why Mr Le Gros Clark and Miss Brinton describe this as "one of the greatest cultural experiments the world has seen." The experiment is still an experiment, for as food becomes more plentiful the Soviet citizen may return to his domestic habits But there are undoubtedly big advantages in centralising food consumption "A civilised community, it is insisted, does not waste its labour, time, and fuel. It has something better to do—unlimited creative work, and the enjoyment of the fullest leisure it can win for itself" It has been calculated that on the old family system cooking, laundry, and the care of children required the services of 30 million Russians for a 10 hour day Collective methods mean a saving of something like five sixths in the labour of cooking, which is important in itself to a country struggling to make good But it has an even greater importance if by the application of scientific methods everyone can have not only sound food, well cooked food, and attractive food but even the right kind of food for his occupation or his digestive capabilities In Soviet Russia there is no large body of unemployed available to fill gaps, and if a worker has to go sick the loss is directly felt by those who employ him. The importance of industrial medicine is thus more apparent in the U S S R than it is here, and correspondingly more attention has been paid to the occupational side of dietetics—so much so that "very soon you will only have to tell the restaurant attendants what your job is and they will serve you with the food best suited to you" (In parentheses it may be noted that the Russian physiologist is supposed to care only for optimum nutrition, he leaves minimum nutrition to the politician) As for weak digestions, it is said that well over half a million employees daily receive "curative diets" in the factory restaurants In the past few years food preparation, including the supply of cooked or partly cooked food by "kitchen factories," has come to be recognised as vital to the State, and those who undertake it receive the honourable title of "engineers of social feeding" Moreover, since "nothing is alive that is not controlled from below by the mass of the people," it is a department of affairs in which the public as consumers are encouraged to take a keen interest If it is true that people who cannot afford adequate food cannot be taught the science of nutrition, it is equally true that a community that is conscious of a growing variety and cheapness in its food supplies can easily be induced to study it both in principle and practice Perhaps this applies as much to our own country as to the U S S R

Le Gros Clark and Brinton begin their book with an excellent 40 page outline of the past and present of the Soviet health service

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[1] Men Medicine and Food in the U.S.S R By F Le Gros Clark B.A and L Noel Brinton B A London Lawrence and Wishart 1936 Pp 173 5s

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INSTITUTE FOR THE SCIENTIFIC TREATMENT OF DELINQUENCY —A course of lectures on the psychiatry and psychotherapy of delinquency is being given by Dr Denis Carroll at the West End Hospital for Nervous Diseases, Welbeck street London, W, at 6 45 P M on Thursdays till March 11th *The course which is intended for probation officers and social workers has been arranged by the institute and further particulars may be had from the secretary, 56 Grosvenor street, London, W 1*

PRINCIPLES OF MEDICAL STATISTICS

V.—PROBLEMS OF SAMPLING: AVERAGES*

THE observations to which the application of statistical methods is necessary are those, it has been pointed out, which are influenced by numerous causes, the object being to disentangle that multiple causation. It must also be recognised that the observations utilised are nearly always only a sample of all the possible observations that might have been made. For instance, the frequency distribution of the stature of Englishmen—i.e., the number of Englishmen of different heights—is not based upon measurements of all Englishmen but only upon some sample of them. The question that immediately arises is how far is the sample representative of the population from which it was drawn, and bound up with that question, to what extent may the values calculated from the sample—e.g., the mean and standard deviation—be regarded as true estimates of the values in the population sampled. If the mean height of 1000 men is 169 cm. with a standard deviation of 7 cm., may we assert that the values of the mean and standard deviation of all the men of whom these 1000 form a sample are not likely to differ appreciably from 169 and 7? This problem is fundamental to all statistical work and reasoning; a clear conception of its importance is necessary if errors of interpretation are to be avoided, while a knowledge of the statistical technique in determining errors of sampling will allow conclusions to be drawn with a greater degree of security.

ELIMINATION OF BIAS

Consideration must first be given, as previously noted, to the presence of selection or bias in the sample. If owing to the method of collection of the observations, those observations cannot possibly be a representative sample of the total population then clearly the values calculated from the sample cannot be regarded as true estimates of the population values, and no statistical technique can allow for that kind of error. If the average daily consumption of calories per man value is found to be 3000 in a group of 200 families from whom particulars are collected of their week's consumption of food, it cannot be deduced that that value is likely to be the true average of all families. Housewives who are willing to undertake the task of giving such particulars may be above the average level of intelligence or be the more careful and thrifty of the population. The sample is, then, not a representative but a somewhat selected sample, and there is no evidence as to the degree to which this selection affects the results. That difficulty of interpretation has been discussed in a previous section. In the present discussion we will presume that the sample is unselected and devote attention entirely to the problem of the variability which will be found to occur from one sample to another in such values as means, standard deviations, and proportions due entirely to what are known as the "errors of sampling." Attention may first be given to the mean.

THE MEAN

Let us suppose that we are taking samples from a very large population or universe and that we know that an individual in that universe may mean are any value from 0 to 9—e.g., we may be recording the number of attacks of the common cold suffered by each person during a specified period, presuming 9 attacks to be the maximum number possible. The mean number of attacks per person and the standard deviation in the whole population we will presume to be known; let the average number of attacks per person be 4·50—i.e., the total attacks during the specified period divided by the number of persons in the universe—and the standard deviation be 2·87 (as found in the previous section by calculating

TABLE IV.—*Number of Colds Suffered by Individuals: Values in Samples of 5 (Hypothetical Figures)*

Sample No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	9 4 2 0 2	6 9 7 5 9	3 1 3 1 1	9 1 2 6 9	7 7 3 6 7	5 5 1 8 6	3 1 6 4 8	0 0 3 3 6	5 [illegible] 7 8 8	4 3 1 6 6	5 9 2 9 8	2 2 7 2 1	4 3 1 9 1	1 6 7 3 5	3 5 0 2 3	6 6 8 8 7	6 5 8 1 3	9 8 9 5 1	2 2 8 7	3 3 8 5 1	5 1 6 2 5	3 6 5 2 4	9 1 5 4 2	6 6 3 7 3	6 2 7 2 1
Mean of each sample	2·0	7·2	1·8	5·4	6·0	5·0	4·4	2·4	5·6	4·0	6·6	2·8	3·6	4·3	2·6	7·0	4·6	6·4	4·8	4·0	3·8	4·0	4·2	5·4	3·6
Sample No.	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
	7 5 3 1 6	7 0 8 6 5	8 0 0 0 4	7 4 0 5 9	 6 4 0 6	4 2 6 8 7	1 0 4 4 3	3 5 1 5	3 9 6 8 0	0 7 1 5 2	4 1 7 3 4	2 5 1 3 4	5 1 0 9 5	9 7 5 3 8	5 8 6 7 7	9 3 9 9 7	7 0 1 9 3	3 0 [illegible] [illegible] 2	0 0 0 7 7	2 3 6 4 0	1 1 1	6 1 1 6 1	0 8 1 7 8	1 4 4 2 1	4 1 1 7 8
Mean of each sample	4·4	5·0	3·6	5·8	3·2	5·4	3·6	[illegible]	7·2	4·8	3·8	3·4	4·4	6·4	6·4	7·4	[illegible]	3·6	1·6	3·0	[illegible]	3·0	6·6	3·4	4·4
Sample No.	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
	0 9 1 0 6	0 8 3 4 3	7 8 6 4 2	0 9 3 1 2	0 4 9 1 6	1 0 5 1 4	0 6 2 5 6	5 7 8 3 9	1 4 8 4 3	9 2 4 7 3	1 7 3 7 8	7 8 2 4 3	3 7 0 5 6	1 5 9 0 0	0 7 8 0 6	3 6 5 0	4 1 8 3 2	0 6 3 3 9	3 3 0 0 [illegible]	6 4 7 4 2	3 0 3 5	 4 4 0 1	8 0 7 7 2	0 [illegible] 0 [illegible] 9	1 9 2 2 0
Mean of each sample	6·0	5·6	5·4	3·0	6·2	2·2	3·8	6·6	4·2	[illegible]	5·2	4·6	[illegible]	[illegible]	5·4	4·4	3·6	4·2		4·6	3·4	3·0	6·0		2·8
Sample No.	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
	2 1 0 4 1	3 9 1 2 1	2 8 2 4 0	8 1 3 3 2	0 4 7 8 1	1 3 1 1 6	2 4 2 7 9	2 7 1 9	9 6 2 2	0 9 3 0	3 3 4 [illegible] 3	9 4 1 5	6 9 0	5 3 1 5 0	6 5 4 2 1	4 0 4 4 2	4 6 3 9 1	3 1 1	8 5 2 3 0	4 4 1 4	1 1 0 0 4	9 3 3	2 1 5 0	5 1 3 9	0 4 2
Mean of each sample	1·6	3·2	3·2	[illegible]	5·2	2·4	4·8	4	5·2	3·4	3	[illegible]	1·8	2·4	3·6	2·8	4·6	4·0	3·6	3·[illegible]	1·[illegible]	5·[illegible]	3·[illegible]	6	3·4

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* On line 18 of last week's article in this series the figure should be 37·2 (years) and not as printed.—ED. L.

how much the experience of each person deviates from the average, finding the average of the squares of these deviations, and the square root of this value) From that universe we will draw at random samples of 5 individuals From each sample we can calculate the mean number of attacks suffered by the 5 individuals composing it To what extent will these means in the small samples diverge from the real mean—i e , the mean of the universe, 4 50 ?

In Table IV are set out a hundred such samples of 5 individuals drawn at random from the universe [1] For instance in the first sample there were 3 individuals who had 2 colds each, one fortunate one who had none, and one unfortunate who had 4 From each of these samples a mean can be calculated which, in all, gives one hundred mean values , and of these means we can make a frequency distribution In the first sample the mean is 2+2+2+0+4−5=2 0, in the second it is 7 2, and so on The distribution of the means is given in Table V, column (2) There was one sample in which the mean was only 1 2 and one in which it was as high as 7 4 (the possible minimum and maximum values are, of course, 0 and 9) A study of this distribution shows

TABLE V —*Mean Number of Colds per Person in Samples of Different Size*

(1) Value of mean in sample	(2) Samples of 5	(3) Samples of 10	(4) Samples of 20	(5) Samples of 50
	Frequency with which mean values as shown in column (1) occurred			
0 75–	1	—	—	—
1 25–	1	—	—	—
1 75–	4	1	—	—
2 25–	2	2	—	—
2 75–	12	5	2	1
3 25–	15	8	9	5
3 75–	12	16	24	22
4 25–	10 } 39	26 } 58	31 } 77	45 } 91
4 75–	17	16	22	24
5 25–	8	15	10	3
5 75–	6	8	2	—
6 25–	7	3	—	—
6 75–	4	—	—	—
7 25–7 75	1	—	—	—
Total number of means	100	100	100	100
Total observations	500	1000	2000	5000
Grand mean	4 43	4 61	4 50	4 48

(*a*) That with samples of only 5 individuals there will be, as might be expected, a very wide range in the values of the mean , the mean number of attacks of the whole 500 individuals is 4 43 which is very close to the mean of the universe sampled—namely, 4 50 (as given above)—but in the individual samples of 5 persons the values range from between 0 75 and 1 25 (the one at 1 2) to between 7 25 and 7 75 (the one at 7 4) *In samples of 5 therefore, there will be instances, due to the play of chance, in which the observed mean is far removed from the real mean*

(*b*) On the other hand these extreme values of the mean are relatively rare, and a large number of the means in the samples lie fairly close to the mean of the universe (4 50)—39 per cent of them lie within three quarters of a unit of it (i e , between 3 75 and 52 5)

When in place of samples of 5 individuals a hundred samples of 10 individuals were taken at random from this universe, the distribution of the means in these samples showed a somewhat smaller scatter—as is shown in column (3) of Table V The extreme values obtained now lie in the groups 1 75–2 25 and 6 25–6 75 and 58 per cent of the values are within three quarters of a unit of the real mean—i e , the mean of the universe

When 100 samples of 20 were taken (column 4) the scatter was still further reduced , the extreme values obtained lay in the groups 2 75–3 25 and 5 75–6 25 and 77 per cent of the values lay within three quarters of a unit of the real mean With samples of 50 (column 5) there were 91 per cent of the means within this distance of the true mean and 45 per cent lay in the group 4 25–4 75—i e , did not differ appreciably from the real mean Outlying values still appeared, but appeared only infrequently

TWO FACTORS IN PRECISION

These results show, what is indeed intuitively obvious, that the precision of an average depends, at least in part, upon *the size of the sample* The larger the random sample we take the more accurately are we likely to reproduce the characteristics of the universe from which it is drawn The size of the sample, however, is not the only factor which influences the accuracy of the values calculated from it A little thought will show that they must also depend upon the *variability of the observations in the universe* If every individual in the universe could only have one value—e g , in the example above every individual in the universe had exactly 3 colds—then clearly, whatever the size of the sample, the mean value reached would be the same as the true value If on the other hand the individuals could have values ranging from 0 to 900 instead of from 0 to 9 the means of samples could, and would have considerably more variability in the former case than in the latter The accuracy of a value calculated from a sample depends therefore upon two considerations

(*a*) The size of the sample

(*b*) The variability within the universe from which the sample is taken

The statistician's aim is to pass from these simple rules to more precise formulæ, which will enable him to avoid drawing conclusions from differences between means or between proportions when in fact these differences might easily have arisen by chance

MEASURING VARIABILITY

As a first step we may return to Table V and measure the variability shown by the means in the samples of different sizes So far we have illustrated that variability by drawing attention to the range of the means and, roughly, the extent to which they are concentrated round the centre point , a better measure will be the standard deviations of the frequency distributions The results of these calculations are shown in Table VI

The standard deviation, or scatter, of the means, round the grand mean of each of the total 100 samples, becomes, as is obvious from the frequency distributions, progressively smaller as the size of the sample increases It is clear, however, that the *standard deviation does not vary directly* with the size of the sample , for instance increasing the sample from 5 to 50—i e , by ten times—does not reduce the scatter of the means by ten times The scatter is, in fact reduced not in the ratio of 5 to 50 but of $\sqrt{5}$ to $\sqrt{50}$—i e , not ten times but 3 16 times (for $\sqrt{5}=2\ 24$ and $\sqrt{50}=7{\cdot}07$ and 7 07/2 24 = 3 16) This rule is very closely fulfilled by the values of Table VI , the standard deviation for samples of

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[1] The 'universe' actually used for this and later demonstrations was a publication entitled Random Sampling Numbers arranged by L H C Tippett (Tracts for Computers No XV Camb Univ Press 1927) Sets of unit random numbers were taken from its columns in fives tens twenties and fifties as required

5 is 1 36 and this value is 3 09 times the standard deviation, 0 44 with samples of 50 The first more precise rule therefore is that the accuracy of the mean computed from a sample does not vary directly with the size of the sample but with the square root of the size of the sample In other words if the sample is increased a hundredfold the precision of the mean is increased not a hundredfold but tenfold

TABLE VI —*Values Computed from the Frequency Distributions of Means given in Table V*

Number of individuals in the sample	The mean or average of the 100 means	The variability or standard deviation of each 100 means.	The standard deviation of the observations in the population sampled ÷ square root of size of sample
5	4 43	1 36	1·28
10	4 61	0 91	0 91
20	4 50	0 61	0 64
50	4 48	0 44	0 41

As the next step we may observe how frequently in samples of different sizes means will occur at different distances from the true mean For instance it was pointed out above that with samples of 5 individuals 39 per cent of the means lay within three quarters of a unit of the true mean of the universe The grand mean of these 100 samples 4·43 is not quite identical with the true mean of the universe 4 50 as of course the total 500 observations are themselves only a sample; it comes very close to it as the total observations are increased—it is 4·48 with 100 samples of 50 Instead therefore of measuring the number lying within three quarters of a unit or one unit of the grand mean (or true mean taking them to be to all intents and purposes identical) we may see how many lie within the boundary lines grand mean plus the value of the standard deviation and grand mean minus the value of the standard deviation —i.e 4 43+1 36=5 79 and 4 43−1 36=3·07 The calculation can be made only approximately from Table V but it shows that some two thirds of the means will lie between these limits If we extend our limits to grand mean plus *twice* the standard deviation and grand mean minus *twice* the standard deviation —i e 4 43+2 (1 36) =7 15 and 4 43−2 (1 36)=1 71—*it will be seen that* these include nearly all the means of the samples *only about* 3 *per cent* lying beyond these values (*according to theory we expect* 5 *per cent* beyond ± *twice the standard deviation*) Roughly the same results will be reached if these methods are applied to the larger samples *Our conclusions are* there fore:

(*a*) If we take a series of samples from a universe then the *means* of those samples will not all be equal to the true mean of the universe but will be scattered around it

(*b*) We can measure that scatter by the standard deviation shown by the means of the samples *means* differing from the true mean by more than twice this standard deviation above or below the true mean will be only infrequently observed

DEDUCING THE STANDARD DEVIATION

In practice however we do not know this standard deviation of the means for we do not usually take repeated samples We take a single sample say of patients with diabetes and we calculate a single mean say of their body weight Our problem is this: how precise is that mean—i e how much would it be likely to vary if we did take another equally random sample of patients? What *would* be the standard deviation of the means if we took repeated samples? It can be shown that the standard deviation of means of samples is equal to *the standard deviation of the individuals in the population sampled* divided by the square root of the number of individuals included in the sample (usually written as $\sigma/\sqrt{n}$) These values have been added to Table VI (right-hand column) and it will be seen that they agree very closely with the standard deviations calculated from the 100 means themselves (they do not agree exactly because 100 samples are insufficient in number to give complete accuracy) With this knowledge we can conclude as follows the mean of the universe is 4 50 and the standard deviation of the individuals within it is 2 87 (see above) if we take a large number of random samples composed of 5 persons from that universe the means we shall observe will be grouped round 4 50 with a standard deviation of $2\ 87/\sqrt{5}$; means that differ from the true mean 4 50 by as much as plus or minus twice $2{,}87/\sqrt{5}$ will be rare If we take a large number of samples of 50 then the means we shall observe will be grouped around 4 50 with a standard deviation of $2\ 87/\sqrt{50}$ and means that differ from 4 50 by as much as plus or minus twice $2\ 87/\sqrt{50}$ will be rare

The final step is the application of this knowledge to the single mean we observe in practice In the previous section the mean systolic blood pressure of 566 males (drawn from the area in and around Glasgow) was given as 128 8 mm We want to determine the precision of this mean—i.e how closely it gives the true mean blood pressure of males in this district

Suppose that the true mean is x Then from the reasoning developed above we know that the mean of a sample may well differ from that true mean by as much as twice $\sigma/\sqrt{n}$ where σ is the standard deviation of the blood pressures of individuals *in the universe from which the sample was taken and n is the number* of individuals in the sample it is not likely to differ by more than that amount—i.e our observed mean is likely to lie within the range $x \pm 2\,(\sigma/\sqrt{n})$ Clearly however we do not know the value of σ and as an estimate of it we must use the standard deviation of the values in our sample It must be observed that this *is* only an estimate for just as the mean varies from sample to sample so also will the standard deviation But the latter varies to a slighter extent and so long as the sample is fairly large the estimate is a reasonable one and unlikely to lead to any serious error In the example cited the standard deviation of the 566 measures of systolic blood pressure was 13·05 We therefore estimate that the standard deviation of *means* in samples of 566 would be $13{\cdot}05/\sqrt{566} = 0\ 55$

We may conclude (presuming that the sample is a random one) that our observed mean may differ from the true mean by as much as ± 2 (0 55) but is unlikely to differ from it by more than that amount In other words the true mean is likely to lie within the limits of 128 8 ± 2 (0 55) or between 127 7 and 129 9 for if it lay beyond these points we should be unlikely to reach a value of 128 8 in the sample

The ± value is known as the *standard error* of the mean and is used as a measure of its precision The estimation is clearly inapplicable if the sample is very small for the substitution of the standard deviation of the few observations in the sample in place of the standard deviation of the whole universe from which the few observations were taken may be a serious error With small samples different methods must be applied

Sometimes in published work *probable errors* are given in place of standard errors The former (which has no advantage over the latter) is merely the standard error multiplied by 0 6745 If the variability likely to be observed is ± twice the standard error it will clearly be ± thrice the probable error, for the latter is, approximately, only two-thirds of the former

The origin of the factor 0 6745 is this We previously calculated the number of means of samples that lay within the limits "grand mean plus once the standard deviation" and "grand mean minus once the standard deviation" If, instead, we calculated the number of means that lay within the limits "grand mean plus 0 6745 times the standard deviation" and "grand mean minus 0 6745 times the standard deviation" we should expect to find that precisely half the means lay within these limits and half lay outside them If, therefore, we took a single sample it would be an even chance that its mean did not differ from the real mean by more than 0 6745 times the standard deviation

Summary

In medical statistical work we are, nearly always, using samples of observations taken from large populations The values calculated from these samples will be subject to the laws of chance—e g , the means, standard deviations, and proportions will vary from sample to sample It follows that arguments based upon the values of a single sample must take into account the inherent variability of these values It is idle to generalise from a sample value if this value is likely to differ materially from the true value in the population sampled To determine how far a sample value is likely to differ from the true value a standard error of the sample value is calculated The standard error of a mean is dependent upon two factors—viz , the size of the sample, or number of individuals included in it, and the variability of the measurements in the individuals in the universe from which the sample is taken This standard error is estimated by dividing the standard deviation of the individuals in the sample by the square root of the number of individuals in the sample The mean of the population from which the sample is taken is unlikely to differ from the value found in the sample by more than plus or minus twice this standard error This estimation is, however, not applicable to very small samples, of, say, less than 20–30 individuals, and must be interpreted with reasonable caution in samples of less than 100 individuals

A B H

SPECIAL ARTICLES

THE NEW RESEARCH LABORATORIES AT THE ROYAL COLLEGE OF SURGEONS OF ENGLAND

ON Monday last the Hunterian Museum in Lincoln's Inn was closed for an indefinite period (perhaps till the middle of March) in order to expedite the building of laboratories, which has just begun, to house the scientific staff and research workers of the Royal College The reasons which prompted the Bernhard Baron trustees to make their gift of £25,000 last May were the difficult conditions under which work was then being carried out, and the conviction that better accommodation for research work would lead to an increase in medical and surgical knowledge. Work is to be pushed forward with all possible speed and it is hoped to have the Bernhard Baron laboratories ready for occupation in the coming autumn The scheme consists in the demolition and remodelling of the internal structure of the floors above the level of the College library and the erection of two towers (shown on the elevation reproduced in Fig 1), one at each end of the existing fourth and fifth floors The roof will be removed and re erected in such a way that additional laboratory space will be provided on the sixth floor Plans of these three floors as they will be when finished are given in Fig 2

SIXTH FLOOR

Commencing on the east side will be found the animal room sufficient for the accommodation of experimental animals necessary for research work This room is not as large as might be expected in laboratories of this size for the simple reason that stocks of experimental animals and animals recovering from operations are ordinarily housed at the Buckston Browne surgical research farm at Downe The animal room will be finished in white tiles and will have one wall, made of glass and steel, which can be opened completely in summer weather It faces south and is adequately ventilated by roof lights. The animal kitchen, food store and cage sterilising room are in a corridor immediately outside the animal room In the food store provision is made for refrigeration and bin storage of bulk foods The cage sterilising room has a vat sufficiently large to contain and sterilise the largest cage in use A staff kitchen is situated immediately outside the common room set apart for the use of members of the scientific staff and research workers This room provides a central place where workers can discuss their problems and meet those interested On the southern aspect of this room is a sliding folding window, 16 feet in length, capable of being thrown open during the summer There will be an open fire and book shelves

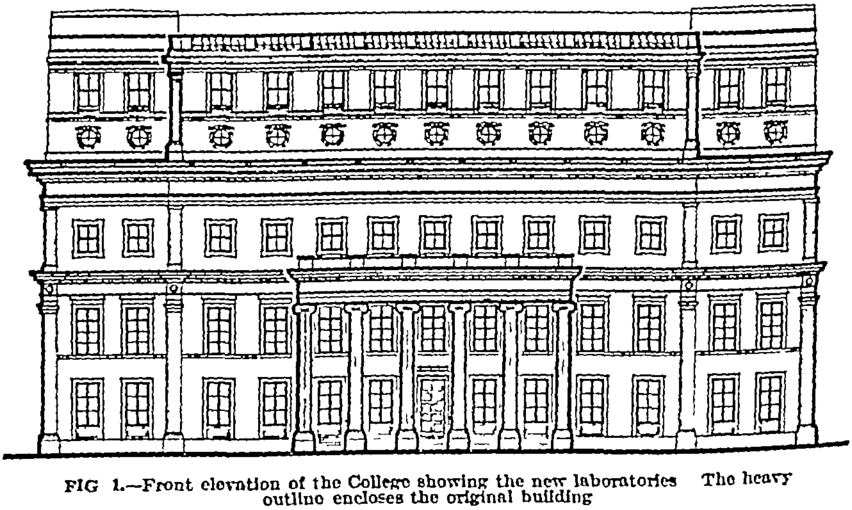

FIG 1.—Front elevation of the College showing the new laboratories The heavy outline encloses the original building

for current periodicals Three small specimen laboratories are for isolated organ experiments and biochemical work then comes the balance and colorimeter room and a small study for the worker who wishes privacy while reading or writing up a piece of work.

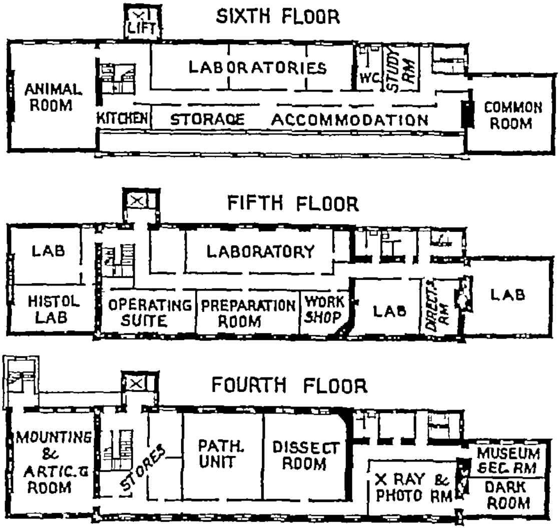

FIG. 2.—Plans of the three new floors.

FIFTH FLOOR

Beginning at the east end is the histological laboratory and a room for the assistant conservator The operating suite comprises theatre with adjacent sterilising room opposite to which on the other side of the corridor is the changing room complete with shower bath and clothes cupboards. The theatre will be tiled with terrazzo flooring To eliminate danger of fire and anæsthetic explosions all electrical switch gear in these rooms will be of mercury and enclosed Compressed air and vacuum services are available for the anæsthetist and operator Next the sterilising room is the main autoclave and water sterilising plant the room also being used for the preparation of laboratory solutions sterilising of dressings &c On the other side of the corridor is a large acute experimental laboratory fitted with kymographs and physiological equipment Adjoining is a room for the smoking and varnishing of drums The workshop for metal and wood working is a necessary provision when large amounts of apparatus are in use The director's laboratory will contain a completely electro magnetically screened cubicle to house the cathode ray oscillograph equipment Alongside is his private room. Another large experimental laboratory completes this floor

FOURTH FLOOR

On this floor is housed the scientific staff of the museum with ample storage space The large east room *is for the* mounting and articulating of pathological and anatomical specimens. The pathological curator's room communicates with the *laboratory where all the pathological* work will be done The anatomical laboratory is for use in the preparation of dissections. The X ray unit is in a separate room out of which opens the dark room The floor is completed by the cataloguing room and a room for the museum secretaries.

The Equipment

An outstanding feature of the new laboratories is the method whereby plasticity of arrangement has been obtained. The furniture—benches cupboards, drawers—is built in standard units which can easily be moved and refixed where necessary Apparatus can be placed in the most suitable position and the whole contents of a room rearranged The only fixed points are the sinks. Electric light, gas vacuum and compressed air points are arranged on the walls in convenient positions, and in the large laboratories trap doors in the floor allow of access to electric, gas and water points so that experiments if necessary can be arranged and carried out well away from the surrounding walls With the exception of the animal rooms operating and sterilising rooms the new floors are laid throughout in Queensland jarrah wood strips and partition wall are built of expanded metal and plaster Rearrangement of rooms would *therefore* be a simple matter should it become necessary The X ray equipment will serve cineradiography as well as the routine X ray investigations. The main characteristics of the design and equipment have been utility and simplicity

Structural alterations to the main College building are required to carry the increased weight of the laboratories but when the scheme is finished these will not be apparent The external appearance will in fact be improved by the new towers which bring the building back again to the original double cube design of Sir Charles Barry who was the first architect of the present structure Barry's original block was a *perfect double cube and the new building closely* approximates to these proportions

The architects are Messrs Lanchester and Lodge and the contractors Messrs Higgs and Hill.

MEDICINE AND THE LAW

Damages against Nature Cure Practitioner

ON the fifth day of the trial in the case of Sones v Foster the jury awarded the plaintiff £400 damages for the negligence of the defendant a nature cure practitioner Mr Sones a man aged about 9 suffered in August 1935 from a gangrenous left foot the condition being due to sepsis following a corn He consulted Mr Foster on August 17th and was advised that frequent treatments would be necessary For this reason he went to Mr Foster's house for several weeks at a charge of 8 guineas a week According to Mr Sones the treatment included painful scrubbing with a nail brush the cutting away of skin the immersion of the foot in almost boiling water and the snipping off of a toe Mr Foster on the other hand said that he devoted himself to improving the patient's general health (which was very bad) so as to prepare him for the operation of removing his foot which he never had any hope of saving After 9 weeks in Mr Foster's house the plaintiff was taken, on Oct 22nd, to St Bartholomew's Hospital where his leg was amputated above the knee next day There was considerable dispute as to the exact state of Mr Sones when Mr Foster first saw him, as to the degree of progress made by the patient in Mr Foster's house, and as to the assurances of improvement which Mr Foster was alleged to have given to his patient As the trial proceeded, it seemed that the issue would be whether or not, through Mr Foster's fault, operation had been delayed with the result that Mr Sones's leg was amputated above the knee instead of below the knee This was perhaps an awkward surgical problem for Mr Foster, whose qualifications were membership of the British Association of Naturopaths, membership of the Association of Medical Herbalists, and membership of the Health Practitioners' Association The experts called on behalf of Mr Foster included Mr Arthur Barker, a herbal practitioner, who, having heard Mr Foster's description of his treatment, deemed it correct, and Dr J A C Braun, who said he had removed his name from the Medical Register in 1935 in order that he might be free to write and lecture as he pleased Dr Braun's evidence was that it was in any case preferable to amputate the patient's leg above the knee even if the surgeon felt he could safely take the leg off below A man did not always have better movement if his knee was saved than if he lost it, if amputation was in any case necessary just below the knee amputation above the knee had every advantage, the condition of arterio-sclerosis confirmed his view During discussions between Mr Justice Atkinson and the counsel in the case, it seems to have been agreed that a naturopath is not expected to show any higher degree of skill than similar practitioners profess, but that, if he steps out of his vocation and undertakes treatment when he knows he can do no good, then he is liable The jury seems to have found that Mr Foster represented himself to be a naturopath of a high order, and that judged by that standard, he had been guilty of negligence in the advice and treatment which he gave to Mr Sones The sum of £490 which their verdict awarded was made up of £40 for the return of fees which the plaintiff had paid, £50 for unnecessary pain suffered by him, and £400 for the loss of his knee

Visitors to courts of law are sometimes intrigued by exhibitions of judicial nescience A judge is allowed to know the points of the compass and the daily rising and setting of the sun Counsel must be careful not to take too much else for granted, many matters of common knowledge must be strictly proved and not merely assumed Mr Justice Atkinson, in summing up to the jury, refrained from taking shelter behind the walls of judicial ignorance Although he said, the orthodox medical profession liked to think itself the sole repository of knowledge connected with the healing art, there were undoubtedly unorthodox practitioners rendering great public service, professional osteopaths and naturopaths were an example The present day appreciation of the benefits of fasting was due to the naturopaths it was wrong to disparage these practitioners nobody need consult them unless he liked The learned judge mentioned the statute of 34 & 35 Henry VIII, still unrepealed, which is sometimes called the Herbalists' Charter though the preamble hints that the non-academic practitioners thereby to be protected are those who have ministered to poor people only for neighbourhood and God's sake and of pity and charity" If the law has stood still since the statute was passed, medicine and surgery have made some modest progress in the meanwhile If courts are anxious to delve into the archæology of statutory references to medicine, there is another Act of Henry VIII (also still unrepealed) which expresses concern because "common artificers, as smiths weavers and women, boldly and accustomably take upon them great cures to the grievous hurt, damage and destruction of the King's liege people and especially of them that cannot discern the cunning from the uncunning" In Sones *v* Foster the plaintiff's counsel probably did not omit to point out that Mr Foster had undertaken a surgeon's task with a herbalist's qualifications The judge may on this account have felt the stronger impulse to defend unorthodox practitioners, he has to see fair play As for distinguishing the cunning from the uncunning or, as the Medical Act puts it, the qualified from the unqualified, there was a suggestion that Mr Foster had unjustifiably represented himself to be a fully qualified doctor As this allegation did not specifically appear upon the plaintiff's pleadings, the court refused to allow evidence to be given on the point Mr Foster agreed, in cross examination, that he was not entitled to use the letters "M D" A circular whereon his signature was followed by the letters "M.D S F" was put to him He explained that the initials stood for Member of the Democratic Socialist Federation, it was a printer's error that there was a gap between the "M D" and the "S F", the circular was destroyed on that account Questioned about documents referring to an agreement with a gas company, he admitted that the words "medical practitioner," describing him, were in his own handwriting But when pressed about the letters "M D" which followed his signature to the agreement, he insisted that they were "N D" and not "M D", the "N D" stood for Diploma in Nature Cure Well, it is all very confusing

Ambulance Service and Hospital Rules

At a recent inquest in Plymouth, where the deceased had been injured in a traffic accident, it was stated that a new rule had been made locally to the effect that on particular days of the week the traffic casualties should (except in serious cases) be taken to particular hospitals It was said that, though this rule had been in force since Jan 1st, neither the police nor the ambulance drivers concerned were aware of it The ambulance took the injured man to the Prince of Wales's Hospital, Devonport, in accordance with the usual orders to take the cases to the nearest hospital. Arriving at the Devonport Hospital at 6 10 P M, the ambulance driver was told that already one accident case was being dealt with in the casualty ward and that the injured man should have been taken somewhere else While waiting in the emergency waiting room, the patient was kept warm and a fresh dressing was applied At 7 38 he was taken to the Lockyer street Hospital where an injection was given He had a fractured leg and a cut eyelid and was suffering from shock He died when about to undergo operation The coroner naturally sought to ascertain whether there had been any failing to treat the man as a serious case on his arrival at Devonport and whether death was accelerated by the removal on the second journey in the ambulance Post mortem examination showed that the patient aged 68, had a weak heart and might have died at any time A verdict was returned that death was due to shock, no blame was attributed to any

(Continued at foot of next page)

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month his name can be seen later in the half yearly index

FROM A PUBLIC HEALTH CLINICIAN

V

KINGS may change but public devotion to the Crown remains largely unchanged similarly the relations of the public to their doctors do not alter materially from year to year In most respects the public obtain from their doctors what they wish They demand medicines and medicines they get. Should any doctor see a patient and advise ever so wisely but not prescribe a medicine patient and friends will be dissatisfied and declare that nothing has been done If a doctor fails to prescribe for his own family it is likely they will seek some tasty or prettily coloured mixture from the local chemist There are indeed a few medicines which have a definite influence on the disease for which they are given and others which may assist a patient to recover more comfortably but the majority alas are of little value Doctors are not magicians or even prophets but just pilots who guide their patients through maladies The doctor merely steers, the patient does the curing

Again the public demand names and causes for their illnesses and names and causes they get. Each day any of us may experience a pang of pain or a discomfort somewhere and it is generally impossible to say exactly why it occurs or to what defect the discomfort is due The position is different with a declared disease but those that consult their doctors for less defined ailments nevertheless demand names and a cause Various terms or phrases have been adopted which satisfy the patient A great favourite is chill; a thorough chill chill of liver stomach kidney heart or nerves Now illness due to chilling may occur and pains may well follow exposure to draught as those in the neck or back after a motor drive or due to some exposure during the night in a cold bedroom but the word chill is used in addition to cover a host of undiagnosable minor ailments Rheumatism is popular and neuritis and last but not least, comes influenza to cover a variety of conditions especially febrile attacks due to infection with a known or unknown germ

It may be said that doctors prescribe unnecessary medicines or that one has wrongly diagnosed as neuritis something which a colleague distinctly said was a 'chill; but let patients remember that these mischances happen because they demand medicines and names

Fashions in treatment come and go bleeding is succeeded by polypharmacy which in turn gives way to dietetics Fashions in diagnosis also change suppressed gout we no longer hear of visceroptosis has almost passed and even colitis of various kinds has become less common There are also ætiological fashions. In the Victorian era excessive smoking was a common cause to which ills were attributed but now that excessive smoking is far commoner we hear much less of this factor maybe because the doctors are among the worst sinners Except for tobacco amblyopia and cancer of the tongue there are few disabilities that can rightly be attributed to this excess There are those who would attribute duodenal ulcer to this cause and perhaps they are right the case does not yet seem proven but to depend mainly on the obiter dicta of great men—a very dangerous basis For those who would attribute thrombo angitis obliterans to tobacco smoking I feel little sympathy To prove that a very rare disease is due to a very common habit necessitates remarkably sound arguments the case to day is even more shadowy than Karl Pearson s statistical suggestion that the decline in tuberculosis was due to the increase in the British Navy The victimisation of the large intestine for alleged metabolic misdeeds was perhaps merely a personal albeit a dangerous idiosyncrasy but even constipation to day has lost its quondam popularity No doubt the pendulum will *swing again*

Perhaps we are all too ready to accept plausible ætiological explanations as are botanists or ornithologists ready to accept somewhat fanciful if not poetical suggestions as the reason for the existence of structural features The cessation of the dread summer diarrhœa has been attributed to the extension of pasteurisation of milk but yet the disease has slackened or ceased in districts where there is no pasteurisation A bright colleague suggested to me that diarrhœa and possibly some other disabilities had gone as the horses on the roads became fewer that may indeed be a factor but I would give a more prominent place to the extension of road tarring which also has perhaps diminished summer epidemics of septic sore-throat

It would be interesting if this question of ætiology were considered from a different angle Instead of seeking to explain certain morbid happening some one with the time to spare might review the changes that have taken place in our environment and habits—such as road tarring or motoring—and work out what results may be reasonably related thereto

* * *

The science of meteorology covers a wide field Most of us are aware of the activities of meteorologists only as made known through weather reports and from the shrewd prophecies heard on the air Some doctors may tap barometers or even keep rain gauges but they are for the most part entirely unfamiliar with the formation and movements of cloud or even the method of judging the velocity of air currents by the movement of small medium or large trees Into the activities of the meteorological society I received a baptism when in a rash moment I promised to act as phenological observer for district

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(Continued from previous page)

body Medical witnesses said that it was a pity that he was not kept at Devonport for treatment but that the delay in treatment did no harm There were two doctors at the hospital one on duty A case of this kind would have needed two doctors and if the patient had been admitted it would have been necessary to keep him warm and quiet for some time before the operation in any event The coroner accepted this evidence but rightly thought any change in the rules for admitting traffic casualties should be made fully known to the police and the ambulance service

COLLEC

A 50 First appearances had to be reported of a large number of plants, migrant birds, butterflies, and insects, to say nothing of frog spawn and the first songs of certain birds It seemed an interesting pastime and I attempted to organise the district through schools and natural history societies as well as keeping all agog my own eyes and ears The result was satisfactory but the duties were too onerous, the task far too great for any busy man, and I abandoned the work after a year with a feeling of relief, a great weight was lifted—it was as if some miraculous message had been received from the commissioners for the Inland Revenue that they would forgo my income tax for 1937 No longer was it necessary to keep one eye constantly on the calendar and the other glued to hedges, fields, woods, marshes, and ponds

Yet the preoccupation carried the compensation that it led me along various meteorological highways and by ways that would never otherwise have been traversed Like many others I bemoan a failing memory and the lack of time and capacity to explore many enchanting fields

* * *

The art of chairmanship and the art of being a secretary are both useful to doctors in their many sided duties Having been chairman or secretary of various bodies, councils, or committees for over 40 years and having made, in one or other capacity, most of the mistakes that it is possible to make, the rudiments of the art are now becoming familiar to me and I have come to realise that good chairmen and good secretaries are born rather than made But, granted a certain innate flair for the work, unceasing education is still necessary if excellence is to be achieved or maintained (And, in parentheses, though some may not agree, I believe the art of letter writing takes a deal of learning)

Certain principles must guide both chairman and secretary, they must be prepared to let others reap the credit for their own ideas and they must avoid sharp retorts The caustic remark, the acid retort, so easy to make (we see them in all the comic papers), yet so difficult to recall, are prone to transport a discussion from the plane of reason to that of emotion Yet chairman or secretary must be prepared to be firm and to reach swift and equitable decisions There are no rigid rules, although there may be relatively rigid rules Some meetings are best guided by permitting heterogeneous speeches, others by keeping everyone strictly to the point A word or two of explanation or a smile will often maintain better control than blows with the chairman's mallet Much have I learnt and much am I still learning from individual tacticians following their individual tactics One able man, wishful to put through difficult and disputed decisions, would begin straight away by quarrelling and making libellous remarks until angry words were bandied and faces became redder, then came a reaction, everyone regretted their excesses, time was passing, and all the controversial matters were decided amicably and according to the wishes of the quarrel some diplomat Lord Askwith seemed to give every one a free hand to talk as much as they liked and about anything they wished, yet at crucial points, when the right atmosphere had been secured, he was always a tower of strength

But this is not an essay on chairmanship and I must hand on the torch of "Grains and Scruples" to my anonymous, but certainly worthy, successor

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Comdrs J C Brown to *Drake* for R N B and J C Souter to *President*, for Medical Dept, Admiralty

Surg Lt Comdrs C H Egan to *Pembroke*, for R N B and D F Walsh to *Ganges*

Surg Comdrs (D) C J Finnigan to *Tamar*, for R N Hosp, Hong Kong, T Hunt to *Drake*, for R N Hosp Plymouth, A T Dally to *Ganges*, and A Macpherson to *Victory*, for R N B

Surg Lt Comdrs (D) D Barker to *Victory*, for R N Hosp, Haslar, L R Armstrong to *Defiance*, and H R Rose to *Pembroke*, for Sheerness T E

Surg Lt (D) H C Benson to be Surg Lt Comdr, (D)

Surg Lts I C Macdonald to *Nelson*, W H C M Hamilton to R N Hosp, Haslar, and B M O'Sullivan to *Eagle*

ROYAL NAVAL VOLUNTEER RESERVE

Surg Lt J F Heggie promoted to Surg Lt Comdr

Surg Lt (D) J Bunyan to *Pembroke*, for R N B

ROYAL ARMY MEDICAL CORPS

Capt F McL Richardson to be Maj Oct 1st, 1936 (substituted for notification in *Gazette*, Oct 13th, *vide* THE LANCET, Oct 24th p 1009)

Short Service Commissions Lt (on prob) J A V Nicoll is secd under the provisions of Art 213, Royal Warrant for Pay and Promotion, 1931

TERRITORIAL ARMY

Col R Jackson, T D, vacates the appt of Hon Col R A M C Units, 55th (W Lan) Div, T A, on completion of tenure

Col J G Martin, T D (ret), to be Hon Col R A M C Units, 55th (W Lan) Div, T A

Lt J C H Speirs to be Capt

Lt G O Montgomery, late T A Res of Off, to be Lt

TERRITORIAL ARMY RESERVE OF OFFICERS

Capt J B Fulton, from Active List, to be Capt

ROYAL AIR FORCE

Flying Offr R F Wynroe is promoted to the rank of Flight Lt

Flying Offr W J Mitchell resigns his short service commission

Flying Offr D G Smith to No 3 Armament Training Camp, Sutton Bridge

AUXILIARY AIR FORCE

Flight Lt H W Walter relinquishes his commission on completion of service and is granted a commission as Flight Lt in class D, A A F Reserve of Officers

INDIAN MEDICAL SERVICE

Maj H Williamson, O B E, to be Lt Col

NEW SCHEME AT FROME VICTORIA HOSPITAL.—Since this hospital was built in 1900 there has been a scheme by which members contributed first a halfpenny and then a penny a week As this is now quite inadequate, a new scheme has been evolved by which married men pay *3d* a week to cover husband wife, and children under 16 who are not employed, young people between 16 and 18 pay *1d* a week and single adults *2d* The scheme covers treatment at several hospitals

WEST SUFFOLK AND IPSWICH HOSPITAL —Sir Bunnell Burton, of Ipswich, and Sir William Churchman of Melton have agreed to share between them the cost of building an orthopædic department and fracture clinic at this hospital The cost is estimated at £6000 Recent extensions and modernisations had absorbed all available funds and the hospital board was committed to the orthopædic scheme by arrangement with the local authorities

CORRESPONDENCE

THE WILL OF THE LATE SIR HENRY WELLCOME

To the Editor of THE LANCET

SIR,—As the trustees appointed by the will of the late Sir Henry Wellcome we ask you to be good enough to publish this letter in order to clear up any misconception which may have arisen with regard to the effects of the will. We are led to make this statement by the number of appeals for contributions to various research undertakings which have already reached us For reasons mentioned below the trustees will not be able to consider any such applications in the immediate future.

In January 1924 the Wellcome Foundation Limited was formed for the purpose of taking over the whole of the business activities of Burroughs Wellcome and Co and the various scientific research institutions and museums established by the late Sir Henry Wellcome who held the whole of the share capital.

By the terms of the will the shares of the Wellcome Foundation are now vested in us as trustees and the activities of the Foundation throughout the world will be carried on in collaboration with the trustees by a board of directors of which the present governing director is Mr George E Pearson who has been closely associated with the late Sir Henry Wellcome for more than 40 years

It will be realised that owing to the magnitude of the testator's estate a very large sum has to be found for death duties Provision has also to be made for —

(*a*) A Welfare Fund for the benefit of employees of the Wellcome Foundation Ltd. and its associated companies

(*b*) The payment of certain specified annuities to relatives and others personally connected with the testator

(*c*) The erection and maintenance of a building in Minnesota to be dedicated as a memorial to the testator's parents.

Subject to these prior charges the remainder of the divisible profits will be utilised in accordance with the testator's instructions in the following manner —

(1) For the maintenance of The Research Undertaking Charity which is a fund for the advancement of medical and scientific research work in any part of the world conducive to the improvement of the physical conditions of mankind and in particular for the discovery invention, and improvement of medicinal agents and methods for the prevention and cure of disorders and the control or extermination of insect and other pests which afflict human beings and animal and plant life and also for the organisation, equipment and expense of special research expeditions and commissions

(2) For the maintenance of The Museum and Library Charity which is a fund for the establishment or endowment of research museums or libraries in any part of the world and for the collection of information of every kind connected with the history of medicine surgery chemistry bacteriology pharmacy and allied sciences which in the opinion of the trustees may be desirable

This statement of the position has been somewhat delayed by the fact that the testator imposed upon all his trustees the obligation before undertaking the trust to enter into a covenant not to be engaged in or in any way to assist in any concern which carried on a business in competition with Burroughs Wellcome and Co Three of the trustees had no difficulty in entering into this covenant immediately after the testator's death but the two medical and scientific trustees felt that certain words in the covenant might be held to restrict them unduly in the performance of their official and general duties to medical science and to imply their particular concern with the business interests of the foundation The matter has now been considered by the High Court of Justice which has made an order allowing them to enter into a covenant in a form removing any such unacceptable implication and enabling effect to be given to what was known to have been the testator's intention.

No trustee director or any other person holds for himself or in his own right any shares in the Wellcome Foundation and all the divisible profits in each year will be devoted to the various purposes named in the will and indicated above

We believe this to be the first example in this country at least of a testamentary disposition by which the whole of the profits from a great manufacturing and trading organisation after certain personal and memorial bequests have been fulfilled are permanently dedicated to the advancement of knowledge for the general benefit of mankind

We are Sir yours faithfully

G HUDSON LYALL
H H DALE
L C. BULLOCK,
MARTIN PRICE
T R ELLIOTT

Jan 26th

PROVISO WHICH, BY ORDER OF THE COURT MAY BE ADDED BY A TRUSTEE TO THE COVENANT REQUIRED OF ALL THE TRUSTEES UNDER THE WILL OF SIR HENRY WELLCOME

PROVIDED that nothing in this Covenant shall be held to prevent me in the exercise of my proper function in any appointment held by me in the public service or under any publicly or privately endowed organisation for the promotion of medical research or under any University in Great Britain from giving advice on scientific matters to any person or persons solely for the purpose of rendering scientific discovery available for the general use and without pecuniary reward or other personal advantage to myself"

INTRADERMAL TESTS IN WHOOPING-COUGH

To the Editor of THE LANCET

SIR,—In your issue of Jan 16th Dr B O Brien and Dr J P J Paton both record experience with intradermal tests in whooping cough. Whereas Dr Paton has had equivocal results Dr O Brien appears to have obtained some correlation between the positive response and a previous history of whooping cough

About a year ago I carried out some intradermal tests and adopted the technique described by Paterson Bailey and Waller[1] using 0 1 c cm. of the Sauer vaccine supplied by E Li Lilly and Co Ltd Readings were taken at 24 and 48 hours The maximum was usually at 24 hours but occasionally the 48 hour reading was greater I have analysed the results according to the standard of Drs O Brien and Paton—i.e. assuming a reaction of 1 cm. or more to be positive

Of 75 children suffering from whooping cough at stages varying from the first week to the third month 49 (65·3 per cent) were positive—a result similar to Dr Paton's I have divided the cases according to whether the test was done in the first three weeks or later, and as the following Table shows, there does appear to be a significant increase in the proportion of positive reactions in the later stages

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[1] Paterson D Bailey R H, and Waller R G (1935) *Lancet* 2 301.

Period of disease	Positive	Negative
1st–3rd week	17	17
4th week or later	32	9
	49	26

It is doubtful whether this increased sensitivity to the vaccine in the later stages of whooping cough is permanent, for in a control series I could not demonstrate any correlation between the positive response and a previous history of the disease

The controls were 75 children convalescent from other infections, 51 (66 2 per cent) were positive Grouped according to whether or not they had had whooping cough, there was no significant difference in the proportion of positive reactions —

Previous history	Positive	Negative
Whooping cough	18	9
No whooping cough	33	14
	51	23

Generally reactions were of a nondescript type compared with the clear cut responses to the Schick and Dick tests, and difficulty was found in interpreting them In many cases there was a small papule of 5 mm or a faint erythema of 5 to 10 mm—both responses arbitrarily classed as negative I do not think one can dismiss such reactions under 10 mm. as being due to trauma of the needle In other intradermal tests such as the Schick and Dick, it is often difficult to detect even the needle puncture at 24 hours in a negative result, and this applies to young children as well as to adults

Dr O'Brien discusses the possible fallacy of the reaction to the Sauer vaccine occurring in a person sensitive to other members of the hæmophilus group A certain number of the cases I have quoted were controlled by using a vaccine of *H influenzæ* Dr E A Straker of the London School of Hygiene kindly supplied me with a freshly isolated strain, which was made up in the same strength as the Sauer vaccine Reactions from 0 1 c cm intradermally were of a type similar to the pertussis reaction, but always greater, the average diameter being 20–30 mm instead of 10–20 The maximum was at 24 hours, fading at 48 hours Of the cases of whooping cough 33 were tested with *H influenzæ* vaccine, and all but 3 were positive The 3 that were negative were also negative to the Sauer vaccine Of the 17 controls tested all were positive The fact that such reactions were obtained fails to rule out the possibility of there being a group sensitivity to the hæmophilus organisms

It is not surprising that variable results have been reported with these intradermal tests, considering that a vaccine is used containing the whole products of the organism—stable or otherwise Elucidation of the antigenic structure of the Bordet Gengou bacillus may reveal in time some product suitable for clinical use, but at present no reliable agent appears to be available

I am, Sir, yours faithfully,

Farncombe Surrey Jan 23rd J S WESTWATER

TUBERCULOUS ABDOMINAL GLANDS

To the Editor of THE LANCET

SIR,—With reference to the interesting article by Mr Colt and Mr Clark in your issue of Jan 16th on tuberculous disease of the abdominal lymphatic glands, I venture some comments, based on 45 patients admitted to this sanatorium with symptoms, and an undetermined number admitted without symptoms but with tuberculosis of the skeletal system in whom calcified abdominal glands were found by radiography As a result of this experience I have gained an impression, which I have not corroborated, that many cases of tuberculosis of the abdominal glands are not diagnosed and give no other evidence of their presence than a positive tuberculin reaction, and that the cases with symptoms or signs form the minority Nevertheless the presence of tuberculous abdominal glands is often suspected and, if the suspicion is sufficiently strong, my own feeling is that laparotomy is indicated for the purpose of diagnosis rather than for the purpose of treatment A positive diagnosis, supported by pathological examination of a removed gland, affords justification for a course of treatment in an open air hospital to produce quiescence of the disease and to avoid the complications mentioned in Mr Colt's and Mr Clark's article A negative diagnosis will relieve the patient and relatives from the burden of suspicion

The question of operative removal of tuberculous abdominal glands should therefore not arise, as it is a fact, difficult to explain but accepted by those who work in open air hospitals, that an efficient régime of rest in the open air, suitable diet, and light treatment will produce in these cases rapid abatement of symptoms and signs, and progress to recovery free from complications Of the above patients the progress of only one was unsatisfactory, and in her case an additional diagnosis was made of tuberculosis of the cæcum —I am, Sir, yours faithfully,

M. C WILKINSON,

Medical Superintendent, Essex County Council Sanatorium, Black Notley

Jan 25th

LYMPHATIC SPREAD IN RECTAL CANCER

To the Editor of THE LANCET

SIR,—As the author responsible for revising the chapter on diseases of the rectum in Rowlands and Turner's "Operations of Surgery," I cannot agree with your reviewer's dismissal of the section on lymphatic spread in cancer of the rectum (THE LANCET, Jan 23rd, p 209) The "many years' old diagram" is Miles', and it represents his view to day, "modern research" is discussed at considerable length on the opposite page If I could accept the simple creed that everything new is right and everything old is wrong, my work would be easy But since against the statement that "when a growth in this situation is removable, there is no downward spread or extension to the ischiorectal fossa," I must set my personal knowledge of six recent recurrences in this situation after radical operations by competent proctologists, my only course is to state both views as fairly as possible

I am, Sir, yours faithfully,

Harley street W Jan 25th W H OGILVIE

PROTAMINE INSULIN

To the Editor of THE LANCET

SIR,—I shall be glad if you will correct an erroneous impression which might be derived from the brief report in your issue of Jan 16th of my remarks following Dr Hagedorn's lecture on protamine insulin—namely, that Dr Hagedorn had willingly delayed the issue of British made protamine insulin This is far from being the case Dr Hagedorn gave to the manufacturers of "A B" insulin, most promptly and readily, every assistance to enable them to prepare protamine insulin (without added zinc) according to his method Such delay as has occurred has resulted from the desire which prompts all British manufacturers of insulin to avoid the chaos which would ensue if the firms concerned were to issue protamine insulin possessing different degrees of retarded action.—I am, Sir, yours faithfully,

FRANCIS H. CARR.

The British Drug Houses Ltd., Graham-street,
London, N.1, Jan. 27th.

THE LEGAL POSITION OF HERBALISTS

To the Editor of THE LANCET

SIR,—The summing up by Mr. Justice Atkinson in the case of Sones v. Foster, tried in the Court of King's Bench on Jan. 21st, calls, I think, for medical comment. The learned judge is reported in the *Times* to have said that "Herbalists have been recognised legally since the passing of a statute in the reign of Henry VIII which has never been repealed," and as the defendant in the case seems to have claimed to be a herbalist as well as a naturopath the inference to be drawn was that he was exonerated by that Act as far as its application went.

I recall a previous occasion when the learned judge, Mr. Atkinson as he then was, evinced an interest in unqualified practice, for he moved an amendment in the House of Commons on Feb. 9th, 1926, to a motion which I had introduced: "That in the opinion of this House an authoritative enquiry, with the object of making recommendations to Parliament for dealing with the whole position of irregular practice in medicine and surgery, is urgently necessary." Mr. Atkinson's amendment was: "That in the opinion of this House an authoritative enquiry with the object of securing the recognition and registration of manipulative practitioners having approved qualifications is urgently necessary."

With all respect I submit that the learned judge's exposition of the present position of herbalists is inaccurate and his description of the effect of the statute incomplete. The history of this statute is interesting. The first attempt to regulate medical practice in England was made by Act 3 Henry VIII, by which no person was allowed to practise as a physician or a surgeon within the City of London or a radius of seven miles from it without examination or approval by the Bishop of London, or outside that area by the Bishop of the diocese concerned. A curious survival of this prerogative of the bishops is the privilege, still existing but never put into operation, of the Archbishop of Canterbury to confer degrees in medicine. The Act 34 and 35 Henry VIII, which is the Act referred to by the learned judge, was apparently passed to allow certain persons to administer medicines without having the licence from the bishops provided for by the earlier statute.

The permission given by it for herbalists to practise was limited to the use of external applications, or, in the event of internal medication, to the treatment of three specified diseases—stone, strangury, or agues. Judicial interpretations subsequent to the passage of the Act declared limitations further restricting its scope. Thus it was early laid down that its effect is that "it does not extend either in words or intent or meaning to give liberty to any person to practise or exercise for gain or profit. The parties licensed by that statute are such persons as shall be good honest people, as old women and such as are inclined to give their neighbours physic from charity and piety"; and indeed the original Act contained the stipulation that the privilege should be restricted to those who "minister to the sick without fee." As the original Act made no provision for testing the knowledge of the herbalist or for any responsible body to administer the Act it remained practically inoperative, and this circumstance, as well as its implied supersession by later Medical Acts, no doubt explains the omission to repeal it formally.

Surely any claim that the statute of Henry VIII legalises the general practice of medicine and surgery by herbalists and that their position is unaffected by the Medical Acts which have since been placed upon the Statute Book could not be sustained.

I am, Sir, yours faithfully,

House of Commons, Jan. 22nd. E. GRAHAM LITTLE.

PERFORATED GASTRIC ULCER

To the Editor of THE LANCET

SIR,—The annotation on p. 216 of your last issue on the use of "a hollow sound" by Dr. Robert Leclercq in treating a perforated gastric ulcer which could not be sutured, reminds me that it is some seven or eight years since I first employed a similar manœuvre. I do not suppose that the procedure was original on my part, though it is not mentioned in most books on operative surgery. Being faced, like Dr. Leclercq, with a large perforation which could not be closed I introduced into the stomach a large soft rubber catheter which fitted the hole. This was not employed afterwards, however, for emptying the stomach, for I pushed it on into the duodenum and used it for giving the patient large amounts of fluids directly into his alimentary canal. The catheter was brought out through a layer of omentum and then through a stab wound in the abdominal wall. No leakage took place and after a few days, when adhesions had formed, the catheter was removed and the opening quickly healed. I have used the method on two or three occasions since that time with the same success. Small perforations can often be successfully "plastered" with a tag of omental fat, but this method may fail when the perforation is large. The catheter may then be employed with confidence.

There can be few surgeons in this country who would contemplate the alternative of performing a partial gastrectomy in the presence of any perforated ulcer. To save the patient's life is the first consideration, without prejudice to whatever further treatment may be necessary afterwards when the crisis has been passed.

I am, Sir, yours faithfully,

London, Jan. 24th. GEOFFREY KEYNES.

OVERBREATHING TETANY

To the Editor of THE LANCET

SIR,—We were much interested in the two papers by Drs. McCance and Watchorn and Drs. Cumings and Carmichael in your issue of Jan. 23rd. These workers record their failure to confirm some experimental findings published by us last year, and their papers call for some comments.

In the second case recorded by Drs. Cumings and Carmichael the level of the calcium in the cerebrospinal fluid (C.S.F.) rose from 4.2 mg. per 100 c.cm. to 4.4 mg. in eighteen minutes and to 4.8 in the course of twenty-eight minutes. Whilst these workers state that the first alteration is within their limits of experimental error, they do not say whether this applies to the total rise. If it does so their results in no way vitiate our own, for we recorded alterations of only 0.2 mg. per 100 c.cm., and this would fall within their limits of experimental error.

There is no record in their paper of the volumes of C.S.F. used in their estimations of calcium. We ourselves calculated our experimental error in a preliminary series of determinations on known solutions, and reduced it by using 6 0 c cm of fluid in each estimation This necessitated the removal of 15 c cm of C S F from the patient for each determination of calcium and phosphate One of the reasons why we did not take our resting specimens immediately before the period of tetany, but on the previous day, was our fear that we might produce severe post lumbar puncture headaches in our patients if we removed as much as 30 or 45 c cm of C S F within half an hour The other reason was that our first patient seemed to develop symptoms of tetany gradually, and had premonitory symptoms and signs such as paræsthesiæ and Chvostek's sign for four or five hours before overbreathing brought on carpopedal spasm and laryngismus stridulus It seemed reasonable to assume that during this period changes in the diffusible calcium might already have been occurring

If this alteration recorded by Drs Cumings and Carmichael in the C S F calcium is outside their limit of experimental error it becomes of importance, for it shows that changes were occurring in the level of the C S F calcium during that period of twenty-eight minutes—although in a direction opposite to that recorded by ourselves

Clearly determinations of the ultrafiltrate calcium of the serum were desirable in our patients, but we had not the facilities for overcoming the great practical difficulties involved in such estimations—as, for example, keeping the serum in gaseous equilibrium throughout the ultrafiltration We were therefore interested to read that Drs McCance and Watchorn had performed this determination (presumably on serum, although this is not made clear by them) but regret that experimental details were not given

If one sets aside theoretical considerations as to the mechanism by which the C S F is formed, on which we do not find ourselves in agreement with these workers, the experiments of Drs McCance and Watchorn suggest that the drop which we found in the C S F calcium was not related to the tetany itself. Were this the case the changes found by us and by Drs Cumings and Carmichael would indicate that the calcium content of this fluid does not remain constant for any individual, but varies by as much as 10 or 12 per cent from day to day and from hour to hour This would be of great importance in the interpretation of the work which has been done, and is being done, on the calcium content of the C S F in other conditions

We are not aware that such variations have been reported.

We are, Sir, yours faithfully,

C G BARNES,
R I N GREAVES

Hammersmith road, W Jan 25th.

WAS SHERLOCK HOLMES A DRUG ADDICT?

To the Editor of THE LANCET

SIR,—I am writing to comment upon a recent reference in your columns concerning the character of Sherlock Holmes, the fictional creation of my father, the late Sir Arthur Conan Doyle, M.D

Your contributor's interesting notes on cocaine poisoning give the erroneous impression that Holmes was a "drug addict." As a matter of actual fact, my father neither conceived nor depicted Sherlock Holmes as a drug addict He was represented as one of those rare individuals who use drugs sparingly and occasionally, and who are the masters rather than the slaves of the drug concerned

It would be superfluous for me to emphasise the differentiation between the two categories

I am, Sir, yours faithfully,

Jan 9th DENIS P S CONAN DOYLE.

HOSPITAL AMALGAMATION IN LIVERPOOL

To the Editor of THE LANCET

SIR,—The alterations in the Liverpool United Hospital Bill, of which the secretary of the Associated Voluntary Hospitals Board gives particulars (p 232), are interesting, especially the exclusion of the purchase of surgical instruments and appliances from the purview of the medical board. As regards the representation of sections of the medical staff on the board my letter, in spite of the secretary's assertion to the contrary, stated clearly that "there is a power to coöpt within limits of particular offices set forth in a schedule" The point, of course, is whether the old phraseology of legal documents referring to "medical and surgical staffs" is adequate in view of the development of special departments, especially since the establishment of the British College of Obstetricians and Gynæcologists

I am, Sir, yours faithfully,

C E A BEDWELL,
House Governor

King's College Hospital Denmark hill S E Jan 25th

OMENTOPEXY

To the Editor of THE LANCET

SIR,—In Mr O'Shaughnessy's admirable account of the surgical treatment of cardiac ischæmia, there is one point that deserves correction The author refers to the omentopexy of Rutherford Morison as an operation for cirrhosis of the liver and he comments on this matter as though that operation might be expected to influence favourably this obscure disease May I say that Drummond and Morison devised their operation not with the idea that it might cure cirrhosis, but as a method of dealing with the ascites, which may be such a distressing sequel of the changes in the liver? When used for this purpose alone, and in the circumstances which the authors of the operation indicated as being necessary to hold out a prospect of success, it has been most valuable

In showing its usefulness, may I be permitted to say that the patient to whom Mr O'Shaughnessy referred and on whom I operated—and who is now well thirty years after the operation—was rapidly going downhill at the time of the intervention He was accustomed to be tapped every fortnight and as a rule 22 pints of fluid were removed. A year after the operation he underwent a further intervention for the radical cure of hernia and for many years afterwards he was to all intents and purposes perfectly well and able to follow the laborious occupation of a stoker in a gas works For some years now he has lived in retirement, but when I heard from him in November last he was still enjoying good health.

Experience of this operation extending over many years has emphasised, what Rutherford Morison originally pointed out, that if these patients are to remain well they must give up the use of alcohol. The successful cases with which I am familiar have always faithfully observed that rule

I am, Sir, yours faithfully,

London W Jan 25th G GREY TURNER.

RADIOGRAM AND RADIOGRAPH

To the Editor of THE LANCET

SIR —Your preference for the word *radiogram* in your supplement On writing for THE LANCET and your defence of it in the subsequent correspondence seem to me to be reasonable and logical. Radiologists are divided into two camps on this question but there are many who like myself feel the termination *-graph* for the verb and *gram* for the noun to be more comfortable In medical discussions I often hear confirmed champions of *the radiograph* unwittingly calling it *the radiogram* *Skiagram* has a slightly archaic flavour and has few friends nowadays, while *roentgenograph* and *roentgenogram* are too distinctively American to gain ready acceptance in this country I believe that an etymological purist would question the respectability of the entire tribe, so mixed is their parentage *Radiogram* is in this respect no worse than its relatives *Radiograph* as a verb we must retain an X ray technician is a *radiographer* there is a Society of Radiographers and *radiography* is the appointed work of its members I would strongly urge the retention of *radiogram* as the corresponding noun I would even ask that those who prefer it should not be asked to change it when contributing to a journal which happens to prefer *radiograph* as the noun. More than that I venture to hope that the Oxford Dictionary will accept it in the future for its use in medical literature is well established. One point should not be lost sight of—namely ease of pronunciation A simple trial will show that it is easier and slightly more euphonious to say *the radiogram shows* or *in the radiogram there is* than to say *the radiograph shows* or *in the radiograph there is*—a point to consider in reading or listening to a paper in which such phrases often recur The word is needed, and is probably more often used in this special sense than in the sense of a wireless message which is usually spoken of as a *wireless* or a *radio* in colloquial speech. *Radiogram* in medical literature has now passed its fortieth birthday and may be considered to have atoned, by forty years of useful work for its rather disreputable ancestry

I am, Sir yours faithfully

Jan 24th. RADIOGRAMMARIAN

A SURVEY OF DIETS

A FEW years ago Prof E P Cathcart F R S and Mrs A. M. T Murray published accounts of the amount and type of food eaten by 154 families at St. Andrews and by others at Cardiff and Reading The diets were then expressed for the most part in terms of protein fat and carbohydrate The figures of those investigations have now been tackled afresh and tabulated according to the actual articles of food. In a report just issued as a green book [1] these findings are given together with a comparison of the choice of food by families of similar economic standing in 1911 and 1933 a report on the diets of 100 women students and some observations on the proportion of food lost in cooking and waste.

To take the parts of the report in order the St Andrews families ranged from the professional classes to the unemployed and were classified into seven groups according to the wage earner's employment (or unemployment) The average weekly expenditure on food per man value ranged in the groups from 6*s* 2*d* to 18*s* 5*d* Part of the inquiry was repeated at another season As might be expected the amount of meat eaten varied with the money spent on food bread showed the opposite tendency fish and game classified together were consumed fairly uniformly except in the richest group cereals and legumes grouped together were eaten least by the two lowest expenditure groups and in fairly constant amounts by the rest The diets were also analysed for their content of calcium phosphorus and iron by using figures from Sherman's Tables and from Sir John Orr and the Rowett Institute With this method of reckoning, all groups were found to take more than the 0·68 g calcium considered to suffice The two poorest groups alone got less iron and phosphorus on average than is considered necessary

The 53 Cardiff families were drawn on the whole from the less well paid inhabitants their average expenditure on food a week per man value ranged from 6*s* 8½*d* to 12*s* Here the meat consumption varied with income the choice of kind of meat differed in some respects from that in St Andrews for instance notably fewer sausages were eaten

The 48 Reading families were on the whole poorer than the others considered Their average weekly expenditure on food a week per man value was 5*s* 2½*d* to 9*s* 4½*d* Here again the amount of meat and dairy produce eaten varied with income The average dietaries for each group of consumers in Cardiff and Reading were considered to contain more than the basal requirements of calcium phosphorus, and iron and in each district and in every group the amount of first-class protein was considered to be above the minimum required The average weekly consumption of milk in St Andrews Cardiff and Reading was respectively 4·08 1·80 and 3·3 pints per man many more of the Reading families were receiving free or cheap milk than in the other districts

The diets of the 12 Glasgow families in 1933 differed from the 23 recorded in 1911 in several respects margarine was not eaten in the 1911 investigation while 11 out of 12 of the families of the 1933 group ate it. All the families bought white bread but whereas none before the war bought brown a quarter of the 1933 group did so The consumption of oatmeal had greatly diminished since 1911 The consumption of roots had risen definitely and that of leafy vegetables still more (29 per cent); none of the 1911 families and three quarters of the 1933 group had eaten fresh fruit the 1911 families took on average about 3 pints of fresh milk per man per week the 1933 about 2·5 pints; in both lots some families bought milk in other forms: 7 out of 23 bought buttermilk in 1911 and only 1 in 1933 5 of the first group bought condensed milk and 7 of the second

At the College of Domestic Science in Glasgow 100 women students ate meals of their own choosing and noted down afterwards the quantities they had taken for from three to five days The students were weighed and measured, and examined by a doctor and a dentist Their average height was 162·1 cm slightly more than the 159 2 cm used in the British Medical Association report , their average weight was 55 85 kg (B M A figure, 55 8 kg) Their average calorie intake was 2035 calories a day , this figure, the report points out, is in keeping with the 2400 calories laid down by the League of Nations committee, if the needs of a woman are accepted as 0 83 *of a man's* The average amount of protein taken was 76 10 g , of which 58 5 per cent was first class protein, a high proportion As the report says, the League committee laid down no level of fat requirement because it is so variable , the average fat consumption of the students, 79 01 g a day, is therefore compared with the average for the St Andrews diets, 118 6 g The average calcium intake (0 69 g) was very close to the figure 0 68 g considered by Sherman to afford a margin of safety, but the intakes varied widely

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[1] A Dietary Survey in terms of the Actual Foodstuffs Consumed By E P Cathcart and A M T Murray Spec Rep Ser med Res. Coun., Lond No 218 London H M Stationery Office 1937 Pp 56 1s.

The estimation of losses incurred in preparing and cooking food and in its residue were made by two means large numbers of samples were tested out at the College of Domestic Science and the waste portions expressed as percentage of the weight of the articles purchased , here, of course, bones counted in heavily and the waste varied from none to 37 8 per cent In the other series of estimations the actual loss was calculated from the refuse pails of the St Andrews surveys and expressed as a percentage of the total calorie value The authors explain that here the losses could only be calculated on edible waste arising from vegetables, bread, and so on , they could not be calculated on bones, ham or bacon rind, for instance The mean percentage loss of edible calories was 2 7 and 2 6 for two series These figures, even if doubled, the report says, " make it very clear that in these St Andrews families at least the conventional 10 per cent for refuse and waste far overstates the real position If these families can be taken as representative then an allowance of 5 per cent for the loss of edible calories in a mixed diet allows an ample margin of error "

The authors conclude that the surveys cover a very representative sample of the population and that few of the diets could be regarded as really poor, far less hopelessly inadequate in energy, protein, and fat content, first class protein, and mineral salts At the same time the content of protective foodstuffs like milk green food, and milk of many diets left much to be desired The amount of tinned or prepared food bought was not large Speaking of a method of improving the dietary standard, they quote Burnet and Aykroyd saying " There is no reason to doubt that valuable results can be obtained, even among families with very small incomes, by educational means " "This," they add, " is not to say that lack of means plays no part Some at least of the families would have spent more on food if the money had been available But even so a large percentage would tend to purchase items of a luxury rather than those of an essential type The main causal factor of inadequate diets in many households is ignorance of how to buy, what to buy and how to use to the best advantage the material bought Balance of expenditure is an art unknown or ignored by many " The authors go on to point out some of the difficulties which hinder the diffusion of knowledge of dietetics and express the opinion that such teaching can only be sure of reaching the housewives if brought by personal contact, demonstrations with utensils which the wives can get too, and patient talk

IRELAND

(FROM OUR OWN CORRESPONDENT)

SOCIAL SERVICES IN THE IRISH FREE STATE

Mr Sean T O'Kelly, Minister for Local Government and Public Health in the Irish Free State, in a speech made in Cork last week reviewed the present condition of the various social services under the control of his department Speaking about national health insurance, he said that there was every indication that with the unification of the approved societies administration will be greatly improved. The membership of the society is increasing yearly, and is now over 500,000 The policy of his department and of the society is to ensure that the provisions of the National Health Insurance Act, 1933, are fully complied with , that all contributions legally due will be paid , and that every insured person will receive promptly the benefit to which he is entitled , and, on the other hand, to preserve the funds, which belong to the insured persons themselves, from depletion by dishonest claims Under the Widows and Orphans Pension Act, pensions amounting to £265,000 a year are being paid at present for 14,360 widows and 14,700 children, including orphans Under a new Bill already introduced the scope of the scheme will be considerably extended, for it will provide for all necessitous widows with dependent children, and the qualifying age for childless widows will be reduced from 60 to 55

While a substantial sum is held by the Hospitals Trust Fund, Mr O'Kelly said that it is to be used for endowment and also for projects now in the preliminary stages that eventually would require heavy expenditure on building and equipment There is a danger, he added, that with large sums available institutions might be erected without consideration of how much it will cost to maintain them, but it is not intended to multiply institutions and burden the ratepayers with heavy expenses merely because there is money for their erection

An investigation in selected areas has begun to ascertain the incidence of mental deficiency and epilepsy in the community This investigation, which is an essential preliminary to legislation, may take some time to complete, but will result, he hoped, in better provision for these unfortunate classes

Among the new services that are yearly increasing in importance are the maternity and child welfare and the school medical services There are still, however, a few counties where, owing to the absence of county medical officers of health, the medical inspection of school children has not yet begun In 1935 the number of children in the country medically examined exceeded 90,000 Under all schemes facilities have been provided for treating the defects discovered, and there are very definite indications of the improvement in the physical condition and health of the children Full advantage ought to be taken of the opportunities during their school life to correct as far as possible physical defects, and to give the children a healthy start in life About 24 000 children are being fed daily and every opportunity is being taken to urge the value of a milk ration of good quality and the necessity of ensuring the purity of the milk supplied

In 1932, the Minister concluded, the programme of the Government was for 75,000 houses to be built in a period of ten years, and the 35,000 mark has now been passed

OBITUARY

HAROLD WATERLOW WILTSHIRE D S O

M D Camb F R C P Lond

Harold Waterlow Wiltshire born in 1870 was educated at Cheltenham and Clare College, Cambridge where he went in 1897 He was always keen on sports and having gone into residence at Clare he took up rowing perhaps giving more time to that pastime than was quite consistent with his early medical studies The master of his college reminded him that he came to Cambridge to read and not to row Enough! he settled down to study and quickly passed his second M.B and graduated B.A in 1900 In 1901 he entered the medical school of King's College Hospital where his uncle, Dr (later Sir) David Ferrier was the senior physician He immediately put his whole energy into the work of the hospital and the social life of the school. He joined the hospital medical society and attended the meetings regularly He was a keen lawn tennis player and was chiefly instrumental in resuscitating the hospital lawn tennis club He became a member of the Hospital VI which won the inter hospitals junior tennis cup in 1909 and in later years he frequently captained the honorary staff VI which played against the Students VI He took a leading part in the formation of King's College Hospital Clubs and Societies Union which was founded in 1908

Wiltshire held the junior hospital appointments at King's so successfully and became such an accomplished and attractive teacher of clinical medicine that in 1910 he was invited to become assistant physician He regularly drew large numbers of students to his out patient department, and amongst his colleagues the students and the nursing staff he soon became the most popular man in the hospital.

When the European War broke out in 1914 Wiltshire immediately joined up he was gazetted captain in the R.A.M.C and served in France In 1916 he became temporary major and was transferred to Salonika. He was three times mentioned in despatches and for his distinguished war service he was awarded the D S O in 1918 the O B E in 1919 and the Order of St. Sava of Serbia.

In 1919 when new departments were created in the medical school of King's Wiltshire was immediately chosen director of the cardiological department he was also appointed vice dean and when The Platanes the hall of residence for students on Champion Hill had been reorganised he was appointed the new warden in charge He had been elected president of the Listerian Society in 1914 but in consequence of the war no meetings were held he was however again elected president in 1919

In 1922 Wiltshire relinquished private practice in order to devote his time to teaching and administration He remained physician to the hospital but combined clinical teaching with the lectureship and demonstratorship of morbid anatomy so that clinical teaching then became linked up with post mortem findings In 1924 however to the profound regret of his colleagues at King's, he was compelled through serious illness to relinquish some of his teaching appointments; unfortunately his health became steadily worse so that in 1925 he felt compelled to resign his office at King's; he was immediately appointed consulting physician to the hospital.

He married Miss Ellen Tibbit daughter of the late Edward Tibbits M D of Bradford and then retired to Bembridge, Isle of Wight. His wife had been a former sister at King's College Hospital and with devoted care she nursed him back to reasonable health, so that he was able to enjoy some of the peace and quiet of country life. He soon became an enthusiastic and successful gardener

Unfortunately his wife herself became seriously ill in the early part of 1933 and he then nursed her with tender devotion but after some months she died of an incurable illness Her death was a sad blow to Wiltshire and from it he never really recovered. His health began to fail rapidly and he became very ill in July last He realised exactly what was happening but he bore his final illness with inexhaustible patience and fortitude He died on Monday Jan 18th.

Harold Wiltshire always gave of his best whether treating a patient, teaching a student or playing a game—he never spared himself and by his death there has passed on a brave gentleman a good and sincere friend a charming companion and a loyal colleague

H WILLOUGHBY LYLE

WILLIAM VERNON SHAW O.B E M D Oxon

MEDICAL OFFICER, MINISTRY OF HEALTH

WE regret to record the death on Jan 21st of Dr W Vernon Shaw Born in 1874 the eldest son of a former rector of St John's Chelsea and subsequently of Callington Cornwall Dr Shaw was a graduate in arts and medicine of the University of Oxford and there and at St Mary's Hospital he had a brilliant career being Brackenbury exhibitioner at Balliol in 1891 and winning an open science scholarship at Christ Church a year later He took a first-class in Parts I and II of the Natural Science School, and was for some years a demonstrator in physiology on the University staff and tutor and lecturer at St John's College He gained an entrance scholarship at St Mary's Hospital and was Kerslake Scholar in 1899 After holding several house appointments at St. Mary's Hospital he was for some years in practice at Malton before being appointed to the staff of the National Health Insurance Commission in 1913 During the war he was engaged in mobilising the supply of drugs and medical stores for the Forces and civil population a position for which his training in organic chemistry eminently fitted him and for his services he was awarded the O B E. in 1920

Photograph by [illegible]

DR. SHAW

The following from a friend in the Ministry of Health is a general estimate by his colleagues of Dr Shaw's fine qualities

"Endowed with an alert mind and retentive memory, by wide reading and experience, Vernon Shaw had acquired a profound knowledge of clinical and preventive medicine Yet he was eminently practical, and his reputation as an epidemiologist 'in the field' was second to none, and it will secure for him an honourable place in the public health annals of our country He will be remembered gratefully by many medical officers of health for his diagnostic acumen in outbreaks of small pox His thorough and painstaking investigations into outbreaks of enteric fever and other infectious diseases in Gloucester, Chorley, Bolton on Dearne, Denby, Malton, and Eton are recorded in the official publications of the Ministry, and they will remain as classics for future students of epidemiology His strenuous and illuminating work during the recent epidemic of typhoid fever in Bournemouth and Poole was almost the last of his labours

"As a colleague, Shaw is unforgettable He was one of the good companions of official life, full of knowledge, and of such variety of knowledge, wisely used and freely shared, spending himself wholeheartedly—perhaps, at times, recklessly—in the sphere of duty to which he was devoted and in which he could exploit his flair for detection and his telescopic vision of distant clues Supple, as R L Stevenson has phrased it, in things immaterial, he held fast to a code of righteous conduct and though, to be sure, he was always ready and responsive in humour, no discussion, no conversation even, on professional matters could be anything but earnest for him, and he defended or demolished an opinion with parallels or divergents amplified with names, nicknames, dates, places, and ancillary circumstances poured from his astonishing memory Incompetence, assumption of learning, or maybe a tactless approach, might quickly fuse a vein of impatience in the rich metal of his character, but to honest poverty of ideas he was a gracious and generous benefactor Official reports give but the formal aspects of his life and work, a diary of his journeyings, experiences and contacts in war time and in peace, and of his own observations on some points in the clinical history of certain of the infectious diseases would have made interesting reading, but if ever he began one it is probable that, unleisured and unintrospective as he was, he would take leave of it without regret

"He was a staunch Churchman, and regularly read the lessons at his parish church He had numerous interests, his particular hobby was gardening, but no account of his career would be complete without reference to his skill as a driver of railway locomotives, and he treasured a letter of appreciation which he received from the London and North Eastern Railway for his services in that capacity during the general strike of 1926

"The death, 15 months ago, of his wife to whom he was much attached was a painful shock to him, and he seemed to seek the dubious anodyne of deeper application to work, now before his time he too has passed on. He leaves a family of one son and three daughters to whom sincerest sympathy is tendered."

Sir James Marchant, writing in the *Bournemouth Daily Echo* of Jan 22nd, says —

"In our recent outbreak Dr Shaw came to our boroughs immediately, and threw himself unreservedly into tracing the source of the disease, in checking its spread, and overwhelming it He brought to bear upon the outbreak all his special qualifications, and early and late he was to be seen going round our districts, visiting farms and dairies, examining those who were employed in any way in milk production and distribution, following up every clue and suggestion with indefatigable diligence, until the outbreak was under complete control. With all his accomplishments and experience he had the happy gift of working with medical officers of health and local committees wherever he went, and our own representatives have paid warm tribute to his humility, persuasiveness, and sterling character"

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

IN the House of Commons on Thursday, Jan. 21st, Wing-Commander JAMES gave notice that on the House going into Committee on the Civil Estimates he would call attention to the need for implementing the report of the Brock Committee on voluntary sterilisation and move a resolution.

Mr ROWSON gave notice on the same day that on the House going into Committee on the Civil Estimates he would call attention to the question of nutrition and move a resolution

In the House of Commons on Jan 25th the Unemployment Assistance (Temporary Provisions) (Amendment) Bill was read a second time

In the House of Commons on Jan. 26th Mr GROVES presented a petition signed by 19,515 citizens in this country asking Parliament to abolish the present powers for the vivisection of dogs

In the House of Lords on Jan 26th the Lord CHANCELLOR took his seat on the Woolsack on his return after several months' illness

Duties on Imported Liver Products

In the House of Commons on Jan 25th Sir REGINALD CLARRY asked the Government to offer the same exemption from duty to liver products that had been given to sweetbreads used in the preparation of insulin. Continental chemists could import the drugs with a duty of only 10 per cent, instead of the 20 per cent imposed by the Bill on the raw materials, about 800 tons of which had to be imported annually, only 20 per cent of this being available from our Dominions Under the tax the drugs would cost an extra 3½*d* per person per week.

Captain EUAN WALLACE, Secretary for the Overseas Trade Department, answered that the real difficulty was that it was impossible to trace the progress of liver after it came into this country

QUESTION TIME

WEDNESDAY, JAN 20TH

Children and Objectionable Cinema Pictures

Mr DAY asked the Home Secretary whether he would give particulars of the result of consultations held between his office and the Secretary of State for Scotland on the exhibition at cinemas of objectionable pictures which were harmful to the minds of children and young persons, and what action he proposed taking in the matter —Mr GEOFFREY LLOYD, Under-Secretary, Home Office, replied The hon Member is no doubt referring to the consultations between the Home Office and the Scottish Office which took place as a result of representations from the National Cinema Enquiry Committee It was arranged that the two Departments should examine the questions raised by the deputation and in particular that a survey of the conditions in Scotland should be undertaken This has now been done and after careful consideration my right hon friend and my right hon friend the Secretary of State for Scotland have come to the conclusion that there are no sufficient grounds for the holding of a comprehensive enquiry such as the deputation suggested. It has however been decided to make certain changes in the composition and terms of reference of the Film Censorship Consultative Committee which was set up in 1931 and in particular to include representatives from Scotland The necessary steps are being taken and my right hon friend before long hopes to be in a position to make a further announcement on this subject

School children and Road Safety

Mr VIANT asked the Minister of Transport whether he had given consideration to the recommendations of the committee on the safety of school-children; and if it was his intention to apply the speed limit in the vicinity of schools in built up areas —Mr HORE BELISHA replied: Yes Sir and to the second part of the question wherever *the circumstances justify it*

THURSDAY JAN 21ST

Grants to Voluntary Hospitals in Special Areas

Mr DAY asked the Minister of Labour whether the commissioner for the special areas had made any grants to voluntary hospitals towards the alteration or extension of their buildings and if he would give particulars.—Mr ERNEST BROWN replied I would refer the hon Member to paras 247 and 248 and to Appendix XI of the Third Report of the Commissioner for Special Areas (England and Wales) Cmd 5303 which covers the period up to Sept 30th 1936 The following are brief particulars of schemes for assisting voluntary hospitals which have been approved since that date —

Organisation	Nature of work	Location of work	Estimated total cost of work
Sunderland Royal Infirmary	Construction of new out patients department, ward block, nurses' home and staff quarters.	Sunderland	£83 500
Blaina and District Hospital	Additions to surgeon's room and mortuary provision of ultra violet ray and other equipment and new motor ambulance.	Blaina	£574
Rhymney Cottage Hospital	Provision of new X ray room nurses bedroom new ambulance and other equipment	Rhymney	£2 06

Distressed Areas and the Means Test

Mr THOMAS WILLIAMS asked the Minister of Labour if he had yet considered the suggestions made by the Birmingham association for the relief of distressed areas regarding modifications of the means test; and if so if he would state the result —Mr ERNEST BROWN replied: I am informed by the Unemployment Assistance Board with whom I have been in consultation in this matter that while their legal powers do not enable them to act precisely in the manner suggested by the association the Board are fully in sympathy with the desire of the association to remove difficulties due to temporary unemployment affecting families or individuals who have transferred from depressed areas They recognise that household expenses in the new district may for some time after removal be greater than they were in the old and further that the removal may result in the creation of special needs Under the new regulations there is also power which will be exercised to meet any reasonable increase in rent which may result from removal For these reasons it is felt that there should be no apprehension that the position of a household removing to a more prosperous area will be rendered difficult and the Board suggest that any person in receipt of an unemployment allowance who contemplates removal should see the Board's local officer in order that the details of his case may be considered and information afforded as to what his probable position will be in the new area

Thefts of Dangerous Drugs from Doctors Cars

Mr RHYS DAVIES asked the Home Secretary whether he proposed to take any action to prevent the recurrence of cases in which members of the medical profession had had dangerous drugs stolen from their motor-cars —Sir J SIMON replied No Sir I have no grounds for thinking that these thefts are other than ordinary cases of petty larceny and I do not think there is any action I can usefully take in the matter

Mr DAVIES: Does not the right hon gentleman think that some responsibility ought to be placed upon the medical profession for neglecting to take care of these dangerous drugs?

Sir J SIMON: I think that the remedy here is the exercise of care by the individual who has such a package in his charge When we consider what a large number of people are moving about—skilled doctors who are attending medical cases—very many of whom have something of the sort with them I do not know that the number of cases is very surprising.

Scarlet Fever in Doncaster

Mr SHORT asked the Minister of Health whether he could make any statement respecting the recent outbreak of scarlet fever in Doncaster and area; whether any proof had been obtained as to whether the outbreak was due to a polluted milk-supply; and if so what steps were being taken to prevent similar outbreaks in the future —Sir KINGSLEY WOOD replied: Some 160 cases of scarlet fever occurred in Doncaster and the adjoining rural district in the recent outbreak, together with a considerable number of cases of sore throat I am advised that the outbreak was due to the infection of milk from one farm When the particular milk-supply had been identified as the source of infection arrangements were made for the pasteurisation of all milk coming from that source As regards the general question I cannot add anything at present to the answer I gave on this subject on Nov 12th

Mr SHORT: Will the milk producer be prosecuted in this case?

Mr MACLAREN: No he will get a subsidy (Laughter)

Small-pox at Oldham

Mr GROVES asked the Minister of Health on what day the first case of small pox was discovered at Oldham; for how long had the patient been infected before discovery and how many cases had been notified —Sir KINGSLEY WOOD replied: The first case was notified on Nov 27th 1936 I am advised that this patient was probably infected about 23 days earlier which interval includes the period of incubation when there are no clinical manifestations Nine cases in all have been notified

Accommodation of Ministry of Health Staff

Lieut -Commander FLETCHER asked the Minister of Health if he was satisfied regarding the accommodation of the staff at the Ministry; how many of the staff worked in the basement rooms and for what periods of time; if there was overcrowding in any of the rooms if all rooms occupied by staff had direct communication with the air if any of the rooms necessitated the use of artificial light throughout the working day and what representations regarding the office accommodation had been received from the staff associations —Sir KINGSLEY WOOD replied I have from time to time received representations from the Departmental Whitley Council about the accommodation provided for the staff of my Department All such representations are carefully considered and where necessary brought to the notice of the Office of Works In general the accommodation in the Ministry is satisfactory About 50 to 55 clerks spend a normal working day of about six hours for three months at a time in the basement courts which are large light and well ventilated rooms. About 20 other clerks work in a basement court about one hour every morning There is no overcrowding in any part of my Department, the only staff rooms not in direct communication with the open air are five messenger boxes Natural lighting in the rooms is generally good and in only a very small proportion of cases is it necessary for any officer to resort to artificial light all day under normal weather conditions

Health Insurance Medical Fees for Young Persons

Mr **Rhys Davies** asked the Minister of Health whether he had now been able to secure agreement with the medical profession in relation to the fees to be paid in respect of young persons entering into employment for the first time, and, if so, if he would state the nature of that agreement —Sir **Kingsley Wood** replied I am still in communication with representatives of the medical profession on this matter and I am not yet in a position to make a statement

FRIDAY, JAN 22ND

Ophthalmic Benefit in Scotland

Mr **Henderson Stewart** asked the Secretary of State for Scotland if he was aware that dissatisfaction was felt by optical practitioners in Scotland at the omission from the new draft regulations for ophthalmic benefit of due recognition of the services of sight testing opticians, and whether, in view of the proved service of these practitioners, he would state the reason for amending, in this respect, the regulations of 1922 —Mr **Elliot** replied I have received certain representations from opticians regarding the terms of the draft regulations referred to and I have arranged to receive a deputation from Scottish opticians on this subject on the 25th instant The views of the opticians will receive the careful consideration of my right hon friend the Minister of Health and myself before the terms of the substantive regulations are finally decided on

MONDAY, JAN 25TH

Blind Persons

Mr **Messer** asked the Minister of Health how many blind persons were registered in England and Wales, how many were in receipt of the blind pension, how many receiving augmentation-of income grants from local authorities, and how many above the age of 16 were unemployable —Mr **Hudson** replied On March 31st, 1936 (the latest date for which figures are available) there were 67,534 registered blind persons in England and Wales, and of these 22,415 between the ages of 50 and 70 were receiving an old age pension on account of blindness, while 54,675 over the age of 16 were classified as unemployable I have no information as to the actual number of blind persons who are in receipt of financial assistance from the local authorities

League and Health Organisation in Spain

Miss **Rathbone** asked the Secretary of State for Foreign Affairs whether his attention had been called to the report of the health organisation of the League that 200 motor-omnibuses were needed for the Spanish Government to assist in the evacuation of the civilian population of Madrid, and whether he could assure the House that the Spanish Government would receive every facility for obtaining these motors, if they desired to do so, from this country —Viscount **Cranborne**, Under Secretary for Foreign Affairs, replied I understand that the report of the health experts sent by the Secretary General of the League to Spain at the request of the Spanish Government has been placed on the agenda of the present session of the Council, but that it has not yet been considered by the Council As regards the second part of the question, I can assure the hon lady that no difficulty will be placed in the way of the purchase of omnibuses for this purpose

Cure for Neuro-lymphomatosis

Mr **Hall-Caine** asked the Minister of Agriculture whether his attention had been called to the recently announced discovery by the university of British Columbia of a cure for neuro lymphomatosis, which caused a loss of £4 000,000 to the poultry industry in Great Britain last year, and whether any action was to be taken in the matter —Mr **Morrison** replied I have seen the brief announcement relating to this discovery that appeared a short time ago in the press As regards the second part of the question, we must, I think, await the full account of the work on which the claim is based

Milk Supply in Schools

Mr **Ellis Smith** asked the President of the Board of Education the percentage of school children who received milk in the schools during 1935 and 1936 in the following places, London, Glasgow, Salford, Stoke on Trent, Eastbourne, Hastings, and Bournemouth —Mr **Oliver Stanley** gave the following answer with regard to English areas —

A = Percentage* of children receiving milk under the Milk in Schools Scheme

B = Percentage* of children receiving milk outside the Milk in Schools Scheme

C = Total percentage* of children receiving milk

Area	October 1935			October 1936		
	A	B	C	A	B	C
London	63 6	0 2	63 8	62 6	0 4	63·0
Salford	46 9	6 9	53 8	44 5	6 6	51 1
Stoke on Trent	48 1	1·0	49 1	51 3	0 8	52 1
Eastbourne	40 0	—	40 0	45 8	—	45·8
Hastings	30 3	2·2	32 5	32 6	2 5	35 1
Bournemouth	48 3	—	48 3	30 8	0 7	31 5

* Percentage = Percentage of number on registers

Coroner and Press Persecution

Sir **William Davison** asked the Home Secretary whether his attention had been drawn to the remarks of the coroner in the case of a recent inquest as to the persecution by representatives of the Press in this and other cases of the relatives of people who died under such circumstances, and whether any steps could be taken by the Government for the protection of citizens from Press persecution of the kind mentioned —Sir **John Simon** replied The coroner in the case referred to observed that all decent people must sympathise with the relatives in the distress which was caused to the bereaved family by the way in which they were persecuted by such inquiries and I must say that I agree with the coroner I hope very much that the responsible heads of the press may devise a means of preventing the repetition of such incidents by sternly discouraging such mistaken and heartless enterprise I am proposing to communicate with the Newspaper Proprietors Association and the Newspaper Society on the subject

TUESDAY, JAN 26TH

Safety in Mines

Miss **Ward** asked the Secretary for Mines how many colliery companies employed fully certified mine managers as safety officials, and how many companies issued free safety helmets to their men —Captain **Crookshank** replied In November last there were about 40 mines or groups of mines where special safety officers had been appointed, additional to the manager and other safety officers required by law I do not know how many of these safety officers held managers' certificates The arrangements between the owners and the workmen for meeting the cost of the safety helmets now widely used vary considerably There is no settled practice and I have not got the information asked for in the second part of the question

Health Insurance Ophthalmic Regulations

Captain **Macnamara** asked the Minister of Health whether he was aware of the anxiety amongst opticians of the country at the new draft regulations concerning the payment of their services for ophthalmic treatment and whether he would give an assurance that their position would be regularised in the new regulations so that there would be no doubt about the legality of their claim for service fees in the future —Mr **Hudson**, Parliamentary Secretary to the Ministry of Health replied There has never been any intention of depriving opticians of a fee for services rendered by them in connexion with the supply of glasses to insured persons but my right hon friend is aware that some doubt has been expressed as to the position under the proposed regulations The matter is receiving the careful consideration of my right hon friend and of the Secretary of State for Scotland and if they are satisfied that some modification of the wording of the draft regulations is required in order to legalise the payment of such a fee the necessary modification will be embodied in the substantive regulations

Bakehouses and Factory Regulations

Mr **Viant** asked the Minister of Health whether his attention had been directed to the impossibility of local authorities being able to prosecute for the purpose of enforcing Section 99 of the Factory and Workshop Act 1901 authority for such having previously been that of the Home Secretary but transferred by the Factories and Workshops (Transfer of Powers) Order 1921; and if so was it his intention to introduce amending legislation at an early date.—Mr **Hudson** replied My right hon friend is aware of the lack of powers referred to by the hon member and my right hon friend the Home Secretary has under consideration the question of dealing with the matter in the forthcoming Factories Bill.

PUBLIC HEALTH

WHAT CHILDREN DIE OF

Between 1861–70 and 1921–30 the standardised death rate of England and Wales declined from 21·3 to 10·6 per 1000 inhabitants in other words mortality in recent years is but half what it was sixty to seventy years ago To this reduction the ages of early childhood have made a large contribution. A study of the decline included in the Annual Report of the Chief Medical Officer of the Ministry of Health for 1933 shows that at each year of age between 1 and 5 the death rate in 1930–32 was a little *less than a quarter of the corresponding* rate in 1861–70 This improvement still continues In the most recent years for which figures are available, 1933–35 the death rate at ages 1–5 years is only approximately 40 per cent of the level in the years immediately preceding the war and even as much as one third below the rate of the decade 1921–30 A corresponding but less phenomenal improvement is shown at the later ages of childhood

ROOM FOR IMPROVEMENT

Satisfactory as is this trend and the evidence it gives of a higher standard of health at a most important—perhaps *the* most important—stage of life we must not let it make us complacent or blind us to the fact that there is still ample room for further improvement The Registrar General's Text volume for 1934[1] includes a comparison of mortality in England and Wales with that recorded in a number of other countries One of the most striking contrasts is to be seen in early childhood Mortality in this country in 1930–32 at ages 1–5 was less than half the rate in Hungary and Italy and less than a third of that in Portugal on the other hand it was more than double the mortality rate of Norway nearly double the rate in Sweden and some 50 per cent above the rates of Holland and Germany Even within England and Wales wide differences at these ages are apparent In 1934 the county boroughs had a rate nearly 20 per cent above that of the country as a whole while in the rural districts it was 25 per cent below The counties of Durham and Northumberland have childhood rates nearly 50 per cent above the national level while in the south western division comprising the counties of Cornwall Devonshire Dorsetshire Somersetshire and Wiltshire they are one third below that level Internationally and internally there is no reason to remain content with the advance that has already so successfully been made How that advance can be most easily extended may perhaps be clarified by a study of the main causes of death in childhood. The Registrar General's returns provide the necessary data. The medical tables for 1935 the latest issued show that that year was particularly favourable to child life the mortality rates being below any previously recorded But owing to the epidemicity of the common infectious diseases figures for a group of years are more satisfactory material than those of a single year We may take those of the last quinquennium 1931–35 as our index In those five years nearly 77 000 deaths were recorded at ages 1–5 a mortality rate of 6·6 per 1000 children 31 000 at ages 5–9 a rate of 2·2 per 1000 and 24 000 at ages 10–14 a rate of 1·4 per 1000

THE VARIOUS CONTRIBUTORS

At ages 1–5 the largest contributor was *pneumonia* which in all its forms accounted for slightly more than one quarter of all the deaths or a mortality rate of 1·7 per 1000 The great majority of these deaths are certified as broncho pneumonia Next on the list comes the most ubiquitous of the infectious diseases of childhood measles In 1931–35 it was given as the cause of death of 9305 children at ages 1–5 or 12·2 per cent of the total deaths at these ages At ages 5–9 it was responsible for a further 1304 deaths or 4 per cent of the total at later ages its contribution becomes negligible Over 10 000 deaths from measles in five years at ages 1–9 is a clear indication of the field in which convalescent and adult serum can operate

A similar assessment can be made of the maximum advantage in terms of mortality that artificial immunisation against *diphtheria* might bring about In 1931–35 the number of deaths attributed to diphtheria was 5400 at ages 1–5 (7·1 per cent. of the total deaths and a death rate of 408 per million) 6589 at ages 5–9 (19·4 per cent. of the total deaths and a death rate of 421 per million) and 1741 at ages 10–14 (7·3 per cent of the total deaths and a death rate of 102 per million), a total of nearly 14 000 deaths in five years at ages 1–14 Its relative importance at ages 5–9 is particularly striking in *these five years diphtheria was the cause of nearly* 1 death in every 5 No efforts to lower the general mortality rate at these ages can ignore that *fact* *Whooping-cough* is a serious cause of mortality at the youngest ages 1–5 but not thereafter at ages 1–5 it was directly responsible in the years of review for 5022 deaths or 7·3 per cent. of the total mortality

Two other causes stand out at each of the age groups—namely *non respiratory tuberculosis* and *violence* To the former was attributed between 8 and 9 per cent of the total mortality at each age (a total of some 11 000 deaths at ages 1–14) From the latter the annual average number of deaths was *a little over 1000 at ages 1–5 (with roughly 3 males* to 2 females) nearly 900 at ages 5–9 (2 males to 1 female) and some 500 at ages 10–14 (3 males to 1 female) Put proportionately roughly 1 death *in 15 at ages 1–5 1 in 8 at 5–9 and 1 in 9 at* 10–14 was due to violence of one kind or another The causes naturally change with increasing age In the youngest age-group the highest contribution is made by burns and scalds closely followed by deaths from falls and crushing (a heading which includes road accidents), at the later ages burns become relatively few, drowning comes into greater prominence, but some two-thirds of the deaths are debited to falls and crushing. Improvement in this category is, therefore, very much a problem of the roads, and for that, unfortunately, there appears to be no easy or immediate solution. Deaths due to burns have declined substantially in the last quarter of a century.

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[1] See *Lancet* 1936 2 12 5

The epidemic diseases of the central nervous system make a relatively small contribution and fluctuate considerably from year to year. In 1931–35 the average annual quota at ages 1–14 was 88 deaths from *poliomyelitis* (acute and polio encephalitis), 75 from *encephalitis lethargica*, and 434 from *cerebro-spinal fever*. The 2171 deaths from the last, the product of the epidemic rise and fall in this disease since 1929, are but little below the deaths due to *scarlet fever*—viz., 2589 deaths. In 1931–35 the notifications of the former (at all ages) were 7850, of the latter they numbered more than half a million, a striking contrast in relative fatality.

Respiratory tuberculosis appears as a cause of death at each age but not prominently before the group 10–14 years, in which it caused approximately one-thirteenth of all the deaths. Its continual decline both in childhood and adult life holds out hopes of a considerable improvement in this figure. Other causes that become of numerical importance in these later years of childhood are *heart diseases* (10·4 per cent. of all deaths), *rheumatic fever* (4·7 per cent.), and *appendicitis* (4·6 per cent.). To the last named were attributed in this five years close on 3000 deaths at ages 1–14, and it is reasonable to suppose that a proportion of these might be averted. Other diseases of the *digestive* system have their peak in early life and decline as childhood advances. A final cause of death of no small importance at each age is disease of the *ear* and *mastoid sinus* to which in these years of childhood between 500 and 600 deaths were annually attributed.

THE WORST OFFENDERS

Ignoring these and many other relatively minor causes of death, this brief review of what children die of in England and Wales brings us to the following answers. At ages 1–5 the most prominent causes of death in recent years have been (in order of their importance) pneumonia, measles, non-respiratory tuberculosis, whooping-cough, diphtheria, and violence; together they accounted in 1931–35 for just over two-thirds of the total mortality rate at these early ages. At ages 5–9 the most important components are diphtheria, violence, pneumonia, and non-respiratory tuberculosis, accounting for half the total mortality. At ages 10–14 we have in order of merit, or rather demerit, violence, heart disease, non-respiratory tuberculosis, respiratory tuberculosis, diphtheria, and pneumonia, accounting in all for just over half the total mortality.

Diphtheria, pneumonia, violence, and non-respiratory tuberculosis appear, it will be noted, in each of the three age-groups and contribute, approximately, one-half the total mortality at 1–5 and 5–9 and one-third at 10–14. Clearly under these four headings must lie a good share of the possible improvement in our mortality rates in early childhood.

Maternity in Willesden

A MAJOR difficulty in the study of maternal mortality is to obtain series of confinements which are sufficiently large, sufficiently homogeneous, and comparable one with another. The expected mortality is only about 4 per 1000, and hence it is only in series of at least 10,000 confinements that fluctuations in the mortality rate due to chance alone are not likely to be very considerable. Such a series is rarely comparable throughout. Changes in the type of patient included, in methods adopted and in record keeping may each make it impossible to generalise about any one series, and when a comparison of one group with another is required the difficulties in finding comparable series are very great. The women in every group, whether attended by doctors, by midwives, or at institutions, are in some way selected, and only the puerperal mortality rate as recorded by the Registrar-General, which must by definition include all the deaths certified as due to natural causes, based on all the births, is free from these objections. Even here we must be chary of our conclusions since, apart from the effects of chance, the incidence of morbidity may vary between different areas; the incidence of the toxæmias, for example, is believed to be higher in the north and west of England than in London and the south-east.

Comparisons, therefore, in maternal mortality rates are not only odious; they are fallacious. Nevertheless the puerperal rate recorded by the Willesden public health department for the first 3000 women confined in their maternity hospital does at least merit attention and further inquiry.[1] Of the total, 2939 were "booked" cases and showed a puerperal mortality rate of 1·02 per 1000 (live and still) births, while 61 were admitted as emergencies, with a mortality rate of 65·57, so that the rate for the whole series was 2·33. The women were unselected in the sense that none were refused admission or transferred elsewhere (except a number of normal cases who could not be admitted owing to pressure on beds) and having regard to the large number of abnormalities and to the extremely high proportion of primiparæ (1454 primiparæ to 1546 multiparæ), these rates are very satisfactory. If the women admitted as emergencies and the 4 deaths among them are taken out of the hospital's series and included in the remaining 11,213 births and 44 deaths respectively, which occurred in the borough during the years in question, a puerperal mortality rate over the period for the rest of the borough of 4·26 is obtained. This latter rate presumably contains a certain number of deaths from abortion and other deaths early in pregnancy; such women would not in any case have come under the care of the maternity hospital and the implied argument is somewhat weakened thereby; but even so the deduction can fairly be made that in Willesden the chances of a safe confinement are greater, as a whole, for a woman who is confined as a booked case at the maternity hospital than for one who is confined elsewhere.

The report does not give details of the borough council's maternity organisation or of the particular methods in use by Mr. Arnold Walker at the maternity hospital. It will be recalled that on the advice of the medical officer of health, Dr. G. F. Buchan, the council some years ago placed an experienced consultant obstetrician in direct clinical charge of their whole maternity organisation, including the maternity hospital, and this is the main feature of their scheme. This far-sighted policy is now, it seems, being justified by its results.

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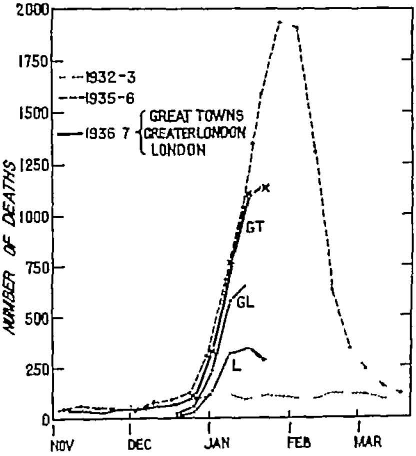
[1] Walker, A. L.: *Clinical Report of the Willesden Maternity Hospital*: First Three Thousand Cases, 1936.

Influenza

Last week 1130 deaths were attributed to influenza in England and Wales The number is only 30 more than those reported in the previous week and it is now evident that the epidemic is on the wane and will not reach the peak of 1932–33 This can be seen on the graph which has been brought up to last Saturday and on it now is traced the course of the epidemic in London and in the Greater London which includes 26 towns in the Outer Ring Here it may be noted how large a share of the mortality was at first taken by Greater London but that the epidemic began to abate there while it was still extending in more distant parts of the country Last week in London itself the deaths had dropped sharply from 344 to 273 Those who wish to trace the probable course of the curve for the Great Towns during the next week or two may note that the ratio of deaths since the beginning of the year has diminished week by week in the following scale: 3·4 2·4 1·4 and now 0·97



Graph showing total deaths from influenza in the Great Towns on the last day of each week in three different years.

It is generally agreed that the character of the disease has changed but little during the epidemic and certainly not in the direction of becoming more virulent This is evident from the age distribution of the 1100 deaths in the week ending Jan 16th There is no sign here whatever of the shift of mortality to the younger ages which is the now familiar danger signal.

Ages	Deaths	Percentage of total
0–24	71	6·5
25–44	111	10·1
45–64	380	34
65 and over	538	48·9
All	1100	100·0

Admissions to L.C C hospitals have we learn fallen right off There is still some pneumonia among the older people but the notifications of pneumonia in London dropped from 440 to 326 In the previous week 2823 cases of pneumonia were reported throughout the country as against 2338 the increase being mostly in Yorkshire and the north western area. This tendency does not seem to have extended further north. Pneumonia has been little mentioned in Edinburgh and still less in Northumbria the distribution has been patchy and often neighbouring communities have suffered very unevenly Most distress has been felt in the Yorkshire wolds and the Scottish islands where wind and rain have contributed. In Ireland while there have been more cases the type has remained definitely mild there is in fact no abnormal pressure on Dublin hospitals for this time of year It has been said with some truth that all over the British Isles the medical profession has been busier than it was during other equivalent epidemics because of the greater readiness of the public to call for their help; the habit has been variously described as valetudinarian or sensible

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JAN 16TH 1937

Notifications—The following cases of infectious disease were notified during the week: Small pox 2 (Failsworth U.D Lancs); scarlet fever 1513; diphtheria 1186 enteric fever 57; pneumonia (primary or influenzal) 2823; puerperal fever 40; puerperal pyrexia 140 cerebro-spinal fever 42 acute poliomyelitis, 5 acute polio-encephalitis 1 encephalitis lethargica 9; relapsing fever 1 (Kendal); continued fever 1 (Poplar); dysentery 23 ophthalmia neonatorum 78

The number of cases in the *Infectious Hospitals of the London* County Council on Jan 22nd was 3857 which included: Scarlet fever 898; diphtheria 1031; measles 16 whooping cough 552; puerperal fever 10 mothers (plus 5 babies) encephalitis lethargica 84 poliomyelitis, 2 At St Margaret's Hospital there were 14 babies (plus 6 mothers) with ophthalmia neonatorum

Deaths—In 122 great towns including London there was no death from small pox or enteric fever 11 (0) from measles 7 (2) from scarlet fever 20 (7) from whooping-cough, 42 (8) from diphtheria 41 (9) from diarrhoea and enteritis under two years and 1100 (311) from influenza. The figures in parentheses are those for London itself

Oxford reported 3 deaths from measles Stoke-on-Trent and Swansea each 2 The whooping-cough deaths were widely scattered in ones and twos over 19 great towns outside London Fatal cases of diphtheria were reported from 24 great towns Liverpool 7 Hull 5 Manchester 4 Birmingham 3

The number of stillbirths notified during the week was 207 (corresponding to a rate of 42 per 1000 total births) including 10 in London.

Guy's Hospital Medical School.—An important extension is now being built at Guy's which will centralise the whole medical school in one block of buildings with easy access between the various departments In the new building a large and modern pathological department with plenty of accommodation for research &c will be provided the departments of pathology bacteriology and clinical chemistry will be housed under one roof there will be adequate accommodation for the medical research unit and clinical research fellow and also for the pharmacological department while the physics department will be made large enough to prevent the necessity of the duplicating of classes Other improvements will be an extension of the research accommodation available in the physiological department an additional demonstrator's laboratory and an extension to the [illegible] meeting room and a staff common room. The removal of the physics department from the existing buildings will enable better accommodation to be found in the school for operative surgery and for X ray living anatomy and human physiology

MEDICAL NEWS

University of Oxford

On Jan 21st the degree of doctor of medicine was conferred on F W Brown and of bachelor of medicine on A H M Richards Dr A E Barclay was incorporated as D M from Christ's College, Cambridge

An election to the Philip Walker studentship in pathology will be made shortly

The studentship is tenable for three years and may be extended for another two It carries a stipend of between £300 and £350 and the student will be expected to devote his full time to pathological research though he may hold a demonstratorship in the department of pathology Applications should be sent to the registrar not later than April 24th Further details will be found in our advertisement columns

University of Cambridge

On Jan 28th the following degrees were conferred —

M B B Chir—D A. S Blair R F Jarrett R Kauntze, and J Wilson

M B—*R B Davis and A G Salaman

B Chir—A M Barry F G A Beckett *H C Maclaren C McNeill *K M Mayall H K Moller *A M M Payne *K W B Rostron and O N Roussel

* By proxy

University of London

The title of reader in physiology in the University has been conferred on Dr W H Newton in respect of the post held by him at University College

The Geoffrey Duveen travelling studentship in otorhinolaryngology has been awarded to Mr P G Scott, chief assistant to the ear department of St Bartholomew's Hospital

University of Edinburgh

The Cameron prize for 1937 has been awarded to Dr J B Collip, F R S, professor of biochemistry in McGill University, Montreal, in recognition of his many contributions to endocrine therapy, and in particular of his work on the parathyroid gland

Chadwick Lectures

Four lectures on improved methods and materials employed in building, following on the two Bossom lectures delivered in December will be given at the Royal Institute of British Architects, 66, Portland place, London W, on Tuesdays, Feb 2nd and 16th and March 2nd and 16th, at 6 P M Further information may be had from that secretary of the trust, 204, Abbey House, London, S W 1

British College of Obstetricians and Gynæcologists

The quarterly meeting of the council of the College was held on Jan 23rd with Sir Ewen Maclean, the president, in the chair Gora Chand Nandi (Calcutta) and Mangaldas Mehta (Bombay) were admitted to the membership, to which the following were also elected —

Geoffrey Sheddan Adam Australia Richard Francis William Kinkead Allen India Doris Crystal Bates, Manchester Francis Arthur Bellingham Australia Edith Brown India Harold Henry Caple Canada William Clement Glasgow Duncan Iain Finlayson Birmingham William Frame Flint Glasgow Phillip Joseph Ganner Birmingham Arthur Lionel Gilbey Portsmouth Uma Pati Gupta, India William Hunter, Newcastle upon Tyne Claude Wilfred Alfred Kimbell New Zealand William Alexander Liston Edinburgh John Robertson McArthur Canada William Leonard MacCormac and Barbara Martin Macewen London Margaret Martin McDowell Halifax Kelvin Alexander McGarrity London and Australia Gerald Maizels London Gladys Helen Marchant India Charles Ferdinand Marks Sheffield William Ian Clinch Morris Edinburgh Harry Stafford Morton and Bryan Charles Murless London Dudley Clifford Racker Louis Rich and Charles Bernard Edward Rickards Manchester George Walter Robson Canada John Myrtle Sanson, Edinburgh Jacobus Wynand Schabort South Africa Lydia Torrance India William Waddell South Africa and Stanley William Wright Newcastle Staffs

The council elected committees in India for the provinces of Bengal, Assam and Orissa for the Bombay Presidency for the Madras Presidency Mysore Travancore and Hyderabad, for the United and Central Provinces and Bihar and for the Punjab North West Frontier Province and Sind The function of these committees will be to consider any matter bearing upon obstetrics and gynæcology in their respective area and to report to the council

Society of Apothecaries of London

At recent examinations the following candidates were successful —

Surgery—A Bagon, Univ of Manch E F Bullock, Univ of Leeds, F J H D De Marigny and P A Gardiner Guy's Hosp F W McKenna Univ of Sheff J Meynell Univ of Manch A P Mittra, Royal Colleges, Edin and F L Skinner, Univ of McGill

Medicine—J E R Palmer St Mary's Hosp, and W W Willson Univ of Oxford and St Mary's Hosp

Forensic Medicine—J E R Palmer St Mary's Hosp and W W Willson, Univ of Oxford and St Mary's Hosp

Midwifery—A A Beazeley Guy's Hosp, I W Claiman Univ of Manch R M Coplans and D S Edwards Middlesex Hosp J Meynell Univ of Manch C T Tahil Univ of Edin and W G Tillman, Guy's Hosp

The following candidates, having completed the final examination, are granted the diploma of the society entitling them to practise medicine, surgery, and midwifery F J H D De Marigny and A P Mittra

Hunterian Society

On Wednesday, Feb 17th at the May Fair Hotel, Berkeley-street, W, this society is holding a banquet to commemorate the 209th anniversary of the birth of John Hunter The hon secretary is Mr A E Porritt, 27, Harley street, London, W 1

Listerian Society

A meeting of this society will be held at King's College Hospital on Wednesday, Feb 10th, at 8 30 P.M., when Dr Alan Gregg, medical secretary of the Rockefeller Foundation, New York, will speak on psychological research All medical practitioners are invited to attend

Pharmaceutical Society of Great Britain

A lecture on the Addendum 1936 to the British Pharmacopœia 1932 will be given by Dr C H Hampshire, secretary to the Pharmacopœia Commission, at the house of this society, 17, Bloomsbury square, W C, on Feb 9th at 8 30 P M

Association of Clinical Pathologists

On Saturday, Jan 30th, the tenth annual meeting of this association will be held at the British Postgraduate Medical School, Ducane road, London, W The morning session will begin at 9 30 A M, and there will be a discussion on the diagnosis of gonorrhœa in which Dr G W Goodhart, Dr J O Oliver, and Dr Orpwood Price will take part At 11 30 A M short papers on the diagnosis of syphilis will be read by Dr J G Greenfield, Dr A G Signy, and Dr H C Lucey In the afternoon, from 2 to 4 P M, demonstrations will be given by Dr John Gray, Mr E J King Ph D, and Mr G A D Haslewood, Dr A. A Miles and Dr J Gray, and Dr Janet Vaughan On the Friday evening before the meeting a dinner will be held at 7 30 P M at the Holborn Restaurant, W C, after which the president-elect Dr S C Dyke will open a discussion on the present and future status of the clinical pathologist

Ella Sachs Plotz Foundation

The trustees of this foundation are anxious to make known the resources of their fund for the advancement of scientific investigation The foundation seldom or never offers stipends to investigators nor does it provide apparatus and materials which are ordinarily part of laboratory equipment Its special purpose is to give grants for the purchase of apparatus and supplies required for special investigations and for the payment of unusual expenses, including technical assistance The research should bear closely on medicine or surgery, and the maximum size of grants will usually be less than $500 In the thirteen years of its existence the foundation has made 282 grants and investigators have been aided in 29 countries Applications for assistance should arrive before May 1st including statements about the nature of the investigation the amount of money wanted and the way in which it will be spent The secretary of the executive is Dr Joseph C Aub Collis P Huntington Memorial Hospital 695, Huntington avenue, Boston, Massachusetts, U S.A

Sir Stanley Woodwark physician to the Westminster Hospital has been elected chairman of the justices of the peace for the county of London acting in the division of St Marylebone for 1937 He is a deputy lieutenant for the county

Royal Society of Arts

On Wednesday Feb 3rd at 8 15 P.M Lieut -Colonel Sir Arnold Wilson will speak to this society at its house in John street Adelphi W C on working-class insurance Tickets of admission may be had from the secretary

Society for Constructive Birth Control

On Wednesday Feb 3rd at 2 30 P M a practical demonstration of the technique of the use of a variety of contraceptive methods will be given by Mrs Marie Stopes D.Sc. and Dr Evelyn Fisher Medical practitioners and senior students should apply for tickets to the hon secretary of the society 108 Whitfield-street London W 1

Grocers' Company Scholarships

To encourage original medical research the Grocers Company offers three scholarships each of £300 a year with allowances The next election will take place in May and further particulars will be found in our advertisement columns

British Association of Radiologists

On Friday Feb 19th at 5 30 P M at 1 Wimpole-street London W Dr E Lysholm of Stockholm will address a meeting of this society to which all medical practitioners are invited He will speak on radiological possibilities of demonstrating the exact location size and pathology of intracranial expansive processes

Superannuation for Nurses and Hospital Officers

It is nine years since King Edward s Hospital Fund for London initiated the federated superannuation scheme for nurses and hospital officers in which 1000 institutions all over the world now take part Nurses and hospital officers are now able before joining the service to assure themselves of a pension on retirement Full particulars can be obtained from the secretary of the Scheme 21 Cavendish-square London W 1

Royal Sanitary Institute

A discussion on the house as a home (design construction, and equipment as they affect comfort) will take place at a meeting at the Royal Sanitary Institute 90 Buckingham Palace road London S W on Thursday Feb 18th at 2 30 P.M The discussion will be opened by Dr H A. Fawcett principal assistant medical officer of the housing section of the public health department of the London County Council, Mr Percival T Harrison, borough engineer and surveyor for Finchley and Mr H H Clay divisional assistant to the division of public health of the London School of Hygiene and Tropical Medicine

Appointments

GOLDIE WILLIAM M B Aberd M R C P Edin has been appointed Research Worker in Arthritis at the Leeds Public Dispensary and Hospital

CUSACK, I B M B Durh , Whole-time Assistant to the Newcastle upon Tyne Radium Centre

HEGARTY MARGARET J M B Belf D P H Assistant Welfare Medical Officer for the County of Durham

LENNOX V N M D Lond Assistant Medical Officer for Rotherham

MARSHALL, C JENNINGS M D M S Lond F R C S Eng Visiting Surgeon to the Kingston and District Hospital

SPINK M S M D Camb Assistant Bacteriologist and Pathologist at the Jessop Hospital for Women Sheffield

London Homœopathic Hospital —The following appointments are announced —

SCHWARSCHILD, HERTA M R C S Eng Pathologist and Bacteriologist

TUCKER, W E B Ch Camb , F R C S Surgeon in Charge of the Orthopædic and Mechanotherapy Department and

ROWLAN, L G M B Glasg., D O M S Surgeon for Diseases of the Eye

Certifying Surgeons under the Factory and Workshop Acts : Dr J IRVING (Brigstock District Northampton) Dr A J BROWN (Ebbw Vale District, Monmouth) and Dr G D O CAMERON (Grassington District York) (W R)

Vacancies

For further information refer to the advertisement columns

Altrincham Cheshire St Anne's Home —Res. Surg O £200

Bath, Royal United Hosp —Two H.S s to Special Depts. Also H.P each at rate of £150

Bedfordshire County Council —Asst County M.O H &c £800

Birmingham Little Bromwich Hosp for Infectious Diseases —Jun. Res M O £300

Birmingham Maternity Hosp —Res Med O and Reg £900

Bradford Royal Infirmary —Res. Surg O £250

Bristol City and County —Asst. M O H £500

British College of Obstetricians and Gynæcologists 58 Queen Anne street W —Res Librarian £400

Bury County Borough —Deputy M O.H £750

Chelmsford and Essex Hosp —H.P and H.S. each £150

Chester County Mental Hosp —Deputy Med Supt. £675

Chesterfield and North Derbyshire Royal Hosp —H S at rate of £150

City of London Hosp. for Diseases of the Heart and Lungs Victoria Park, E. —H.P at rate of £100

Colonial Medical Service —Thirty Vacancies, £600–£ 00

Dewsbury and District General Infirmary —Second H.S., £150

East Ham Memorial Hosp Shrewsbury-road E. —H.P at rate of £150

Elizabeth Garrett Anderson Hosp Euston road N W —Asst Radiologist £100

Gloucester Barnwood House Registered Mental Hosp —Med Supt. £1500

Great Yarmouth General Hosp —H.S £140

Grimsby and District Hosp —Surgeon for Orthopædic Dept. and Fracture Clinic, £350

Grocers Company Grocers' Hall E C —Three Medical Res Scholarships, each £300

Guildford Royal Surrey County Hosp. —H.S., at rate of £150

Hereford, Herefordshire General Hosp —Hon Physician for Cardiological Dept

Hosp of St John and St Elizabeth, 60 Grove End-road N W —Clin Asst. in X Ray Dept £75.

Huddersfield Royal Infirmary —Cas O at rate of £200 Also H.P and Res Anæsthetist at rate of £150

Ilford King George Hosp —Hon. Physician

Lancaster Royal Albert Institution for the Feeble Minded. —Res Jun. Asst M O £375

L C C —Asst MO s Grade I and II £350 and £250 respectively

Leeds Public Dispensary and Hosp North-street —Anæsthetist 35 guineas

Liverpool and District Hosp for Diseases of the Heart —H P £100

Liverpool Royal Southern Hosp —Hon Asst Orthopædic Surgeon

Liverpool Sanatorium Delamere Forest, Frodsham —Sen and Jun Assts., £375 and £325 respectively

London Hosp E —Paterson Research Scholar and Chief Asst for Cardiac Dept , £400

Maidstone, Kent County Ophthalmic Hosp —H.S to Ear Nose and Throat Dept., at rate of £150

Maidstone West Kent General Hosp —H P., £175

Manchester Booth Hall Hosp for Children —Res Asst M O at rate of £200

Newcastle General Hosp —Venereal Diseases Clinic M O £500

Newcastle upon Tyne Barrasford Sanatorium. —Res Med Asst., £250

Newport County Borough —Asst M O.H , £500

Northampton Mental Hosp Berrywood —Third Asst M O £450

Norwich Norfolk and Norwich Hosp —H.S to Special Depts £150

Nottingham General Hosp. —H.S for Fracture and Orthopædic Depts., £300

Oxford University —Philip Walker Studentship in Pathology £300

Oxford Wingfield Morris Orthopædic Hosp Headington —Res H.S £100

Pendlebury Royal Manchester Children s Hosp —Asst. M O for Out patients Dept., at rate of £150

Plymouth Prince of Wales's Hosp Devonport —H.S at rate of £150 Also Jun H.S and Res Anæsthetist and H S to Special Depts., each at rate of £1 0

Portsmouth City —Asst Dental Surgeon £450

Princess Elizabeth of York Hosp for Children Shadwell E —Asst. Surg

Queen Charlotte s Maternity Hosp Marylebone road N W —Res M O for Isolation Hosp at rate of £200

Queen s Hosp for Children Hackney road E. —Cas O At rate of £100

Queen Mary's Hosp for the East End E —Hon Asst Physician to Psychological Medicine Dept.

Reading Royal Berkshire Hosp —Res Anæsthetist £2[illegible]

Royal Air Force Medical Service —Commission

Royal Cancer Hosp Fulham road S W —H S to Radium Dept at rate of £100

Royal Free Hosp Gray s Inn-road W C —Hon Asst Physician

Royal Northern Hosp, Holloway N —H P also Obstet H S each at rate of £[illegible]0

Ryde, Royal Isle of Wight County Hospital —Jun H S , £[illegible]

St Bartholomew s Hosp E C —Dental H S at rate of £[illegible]

St John Hosp Lewisham S E —Res H P and Cas O each at rate of £100

Sheffield Royal Hosp —Two Clin Assts each £[illegible]

South Shields Ingham Infirmary —Sen and Jun H S s £[illegible] and £1[illegible] respectively

Spanish Medical Aid —Surgeon

Stockport County Borough —Sen Asst M O H and Clin Tuber O £[illegible]

Swansea Hill House Infectious Diseases Hosp —Res M O £[illegible]

Tunbridge Wells, Kent and Sussex Hosp—Res Surg O £250
University of London, W C—University Studentship in Physiology, £100
Wallasey, Victoria Central Hosp—Hon Asst Orthopædic Surgeon
West End Hosp for Nervous Diseases 73, Welbeck street W—Hon Medical Psychologist for Child Guidance Dept
Wolverhampton Royal Hosp—H S at rate of £100
Woolwich and District War Memorial Hosp Shooters Hill, S.E—Res M O, £175 Also H.S, at rate of £100

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Newbury (Berks), Fillongley (Warwick) and Dornoch (Sutherland)

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1 Wimpole street, W

TUESDAY, Feb 2nd

Orthopædics 5 P.M Mr B Whitchurch Howell Distraction of Joints (Presidential address)

Pathology 8 15 for 8 30 P M (inoculation department, St Mary's Hospital, W), H B Day 1 Bilharzial Disease of the Lungs I Doniach and D E Price 2 Hyperchromic Anæmia in an Infant E W Fish 3 Dental Sepsis A Fleming 4 The Effect of Chemicals on the Growth of Tubercle Bacilli in Human Blood 5 A Method of Making Museum Specimens of Mould Cultures A C Fraser and H C Stewart 6 Detoxication and Serum Particles R M Fry and E D Hoare 7 Some Anaerobic Gram negative Bacilli from Blood Cultures A T Fuller 8 Estimation of *p* aminobenzenesulphonamide in Biological Material 9 A Method for the Extraction of Polysaccharide Haptens from Bacteria D Harley 10 Bacterial Allergy and Immunity with Reference to the Pneumococcus G E Harre and W D Newcomb 11 Recent Additions to the Museum L Holt 12 Stability of Staphylococcus α toxoid 13 Function of Agar in *Staphylococcus α toxin Production* A St G Huggett 14 Experiments in Delayed Blood Coagulation W Howard Hughes 15 The Antibacterial Effect of Inflammatory Sera and Exudates A Macgregor 16 Lymphatic System of Teeth and Jaws I H Maclean 17 A Method of growing *B pertussis* in Fluid Cultures D M Pryce 18 Carcinoma of Jejunum in Man and Guinea pig 19 Cerebral Aplasia with Adrenal Changes 20 Chylous Ascites Sir Almroth Wright and K B Rogers 21 The Growth of Tubercle Bacilli in Blood 22 The Vaccine Response Test—Method of Carrying Out the Procedure

WEDNESDAY

History of Medicine 5 P.M Dr W H S Jones The Playground of Scientists Dr Max Meyerhof Early Mention of Sleeping Sickness in Arabic Literature

Surgery 8 30 P M Mr Harry Platt and Sir Robert Stanton Woods Injuries of the Peripheral Nerves

FRIDAY

Otology 10 30 A M (Cases at 9 30 A M) Prof Laskiewicz (Poland) On the Diagnosis of Cerebral Abscess Progressing Towards the Lateral Ventricle Mr A Tumarkin Some Observations on the Functions of the Labyrinth

Anæsthetics and Laryngology 5 P M Mr H E G Boyle Dr A W Matthew Dr J H T Challis Mr T B Layton Mr W S Thacker Neville and Mr D F A Neilson The Choice and Technique of Anæsthetics for Nose and Throat Operations

Otology and United Services 8 30 P M Major John Hare Group Capt David Ranken Surgeon Lieut Commander V G Horan, Mr E B Waggett Mr E D D Davis and Mr Terence Cawthorne Effect of Aural Conditions on Fitness for Active Service

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS Lincoln's Inn fields W C

MONDAY Feb 1st—5 P M Mr Philip Wiles Postural Deformities of the Spine

WEDNESDAY—5 P M, Mrs Philippa Martin The Effect on the Eye of Radium Used for Treatment of Malignant Disease in the Neighbourhood

FRIDAY—5 P.M Mr J H Saint The BIPP Method of Treatment of Acute Osteitis (Hunterian lectures)

BRITISH POSTGRADUATE MEDICAL SCHOOL

MONDAY, Feb 1st—2 30 P M Dr H MacLean Nephritis and Allied Conditions

TUESDAY—2 P M Mr E King Ph D Hepatic Function and Jaundice

WEDNESDAY—Noon clinical and pathological conference (medical) 2 30 P.M clinical and pathological conference (surgical) 4 30 P M Mr A S Parkes, F R.S Experimental Endocrinology

THURSDAY—*Noon, clinical* and pathological conference (obstetrics and gynæcology) 2 30 P.M Dr Duncan White radiological demonstration 3 30 P.M Dr A. A Moncrieff Feeding of the New born Infant (Breast and Artificial)

FRIDAY—2 P M, operative obstetrics 2 30 P M, Mr W B Gabriel Surgical Diseases of the Rectum 3 P.M., department of gynæcology, pathological demonstration.

Daily 10 A M *to* 4 P M *medical clinics*, surgical clinics and operations, obstetrical and gynæcological clinics and operations

WEST LONDON HOSPITAL POST GRADUATE COLLEGE, Hammersmith W

MONDAY, Feb 1st—10 A.M, skin clinic 11 A.M, surgical wards 2 P M operations, surgical and gynæcological wards, medical surgical and gynæcological clinics 4 15 P.M Mr Arnold Walker Uterine Inertia

TUESDAY—10 A M, medical wards 11 A M, surgical wards 2 P M, operations medical, surgical and throat clinics 4 15 P.M Dr Hugh Gordon The Internal Treatment of Skin Diseases

WEDNESDAY—10 A.M, children's ward and clinic. 11 A M., medical wards 2 P M, gynæcological operations, medical surgical and eye clinics 4 15 P.M Dr Grainger Stewart Subarachnoid Hæmorrhage

THURSDAY—10 A M, neurological and gynæcological clinics Noon fracture clinic. 2 P M, operations, medical, surgical and genito urinary and eye clinics 4 15 P M, Dr O Carden Sibley Anæsthesia for Oral Cases

FRIDAY—10 A M medical wards, skin clinic Noon, lecture on treatment 2 P.M, operations medical, surgical, and throat clinics 4 15 P M., Mr Grant Batchelor Surgical Lecture

SATURDAY—10 A.M, children's and surgical clinic 11 A.M, medical wards

The lectures at 4 15 P.M are open to all medical practitioners without fee

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W

MONDAY Feb 1st, to SATURDAY, Feb 6th—ST JOHN'S HOSPITAL Leicester square W C afternoon course in dermatology (open to non members)—NATIONAL TEMPERANCE HOSPITAL, Hampstead road, N W, Tues 8 30 P M, Mr Holmes Sellors Kidney and Bladder Thurs 8 30 P.M. Mr A M Boyd Tongue—Courses arranged by the fellowship are open only to members.

NATIONAL HOSPITAL, Queen square W C

MONDAY *Feb 1st—3 30 P M., Dr Symonds* Cerebral Tumours (I)

TUESDAY—3 30 P M Dr Denny Brown The Peripheral Mechanism of Sensation

WEDNESDAY—3 30 P M Dr Kinnier Wilson Clinical Demonstration

THURSDAY—3 30 P M Dr Gordon Holmes F.R.S *Neurosyphilis (II)*

FRIDAY—3 30 P.M Dr Denny Brown The Peripheral Mechanism of Sensation

Out patient clinic daily at 2 P M

LONDON SCHOOL OF DERMATOLOGY, 5 Lisle-street, W C

TUESDAY Feb 2nd—5 P M., Dr J E M Wigley Tuberculosis Cutis

THURSDAY—5 P M, Dr R. T Brain Erythemato-squamous Eruptions

HOSPITAL FOR SICK CHILDREN, Great Ormond street W C

THURSDAY, Feb 4th—2 P M Mr Charles Donald The *Use of Encephalography and Ventriculography* 3 P.M, Dr W G Wyllie Therapeutic Measures in Diseases of the Nervous System

Out patient clinics daily at 10 A M and ward visits at 2 P M

CENTRAL LONDON THROAT NOSE, AND EAR HOSPITAL Gray's Inn road, W C

FRIDAY Feb 5th—4 P M Mr W A Mill Earache in Normal Ear

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland street W

TUESDAY, Feb 2nd—5 30 P.M Dr John Parkinson Heart Attacks

ST JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE 42 Ranelagh road, S W

FRIDAY Feb 5th—4 30 P M Sir Leonard Hill F R.S The Physiological Action of Methods of Treatment in Rheumatic Diseases

SOUTH WEST LONDON POST GRADUATE ASSOCIATION, St James Hospital Ouseley road S W

WEDNESDAY, Feb 3rd—4 P M, Dr W E Lloyd The Failing Heart.

LEEDS GENERAL INFIRMARY

TUESDAY, Feb 2nd—3 30 P M, Dr Burrow Referred Pain

ST MARY'S HOSPITALS Manchester

THURSDAY Feb 4th—4 15 P M (Whitworth street West Hospital) Dr J W A. Hunter Forceps Delivery

GLASGOW POSTGRADUATE MEDICAL ASSOCIATION

WEDNESDAY, Feb 3rd—4 15 P M (Royal Hospital for Sick Children) Mr Matthew White Hæmaturia in Childhood

SUNDAY FILMS AND BIRMINGHAM HOSPITALS—The sum of £9000 has been allocated for distribution among the Birmingham hospitals under the Sunday Entertainments Act

NOTES, COMMENTS, AND ABSTRACTS

NEW GROWTHS IN ANIMALS

THE tumours of domestic animals are of little economic importance, and have therefore been little studied. A possible explanation of their apparent rarity is that few domestic animals survive to old age. This explanation is supported by the fact that in dogs, which often die a natural death, new growths are not uncommon. On the other hand, if they often caused death in cats or horses the fact would be recognised.

Apart from the transmissible tumours of birds which have been carefully studied, not much is known about animal neoplasms and text-books on the subject are scarce and incomplete consisting almost entirely of rather elementary morphological descriptions, many of them based on too few cases. In an attempt to fill some of the gaps C Jackson in South Africa has classified and described *all* the new growths in the Onderstepoort collection of pathological specimens, and records his findings in the *Onderstepoort Journal* (1936 6 1) The collection of some 18 000 specimens contains only 600 neoplasms, and this illustrates their relative unimportance in veterinary pathology It is necessary to mention however what type of material is likely to find its way to the laboratory Onderstepoort as the centre of veterinary research in South Africa is fed by Government veterinary officers in the field and by municipal officers such as abattoir inspectors but the bulk of material is collected during post-mortem examinations carried out at the laboratory All species of farm animals are examined but because many aged horses are used for virus and antiserum production more examinations are made of aged horses than of aged animals of other species. In all 119 tumours were examined from horses, 108 from cattle 80 from sheep 40 from goats 4 from pigs, 72 from dogs, 2 from cats, and 203 from poultry The attention nowadays paid to lympho-granulomatous conditions of birds (e g fowl paralysis, Marek s disease, Newcastle disease) makes it probable that a more careful search is made for tumours in birds than in mammals. Comparatively few dogs and cats are sent to the laboratory in the course of ordinary routine and Jackson must have largely depended on the coöperation of a very small group of private practitioners in obtaining material from domestic pets.

Thus the species incidence of animals tumours as recorded by Jackson cannot be considered as a true random selection amongst species. This is particularly evident when one considers the relatively small number of tumours from dogs—a result partly of the lack of post-mortem material and partly of the shortness of the life of dogs in South Africa compared with England For various reasons including disease and neglect many dogs never pass maturity in South Africa and comparatively few receive skilled veterinary attention. In England, on the other hand the majority survive distemper and the perils of the road to reach a ripe old age. Even the poorest owners manage to find the modest shilling which ensures attention for their pets when sick and the presence of neoplasms is thus brought to the *attention* of pathologists and a vast amount of material is available for investigation Hitherto little has been done to make adequate use of such material but Jackson s example may stimulate others to cover the ground he has been forced to neglect

In reporting his results Jackson gives little notice to tumours that are easily diagnosed and describes in detail those he found hard to classify Besides recording simple morphological features, he has made nuclear : Nucleolar (n : N) ratio estimations and estimations of mitotic indices has examined the significance of other nuclear inclusions and has investigated the intracellular matrix of different kinds of tumours.

A quick and reasonably accurate method was evolved for estimating the n N ratio by means of a dot-and circle graticule" inserted into the ocular of the microscope As regards the interpretation of the n N ratio Jackson emphasises that attention must be paid to the n N ratio of normal cells of the particular tissue under consideration before any significance can be attached to this ratio in tumour cells. In using the n N ratio as an index of malignancy this term must be understood to embrace not only metastasis but also very rapid invasive growth. The difficulties underlying the interpretation of the mitotic index include a lack of knowledge of the rate of division of nuclei of different types of normal cells in various animal species and of the part played by amitotic division in the growth of animal tumours Furthermore the difference between the mitotic indices of benign and malignant tumours is merely one of degree there being no clear-cut line of demarcation Nevertheless the mitotic index does serve to express with some precision statements such as " mitotic figures are frequent "

Average mitotic indices have been worked out for some of the commoner tumours but the case-groups were usually too small. In 11 canine contagious venereal tumours the average was 6·6 In 30 acanthomata from various species it was 5 0 It is noteworthy that in 6 canine basal-celled epitheliomata it was only 1 8 Apart from the contagious venereal tumours and acanthomata, which had maximum indices of 15 and 13 respectively the maximum indices encountered in other tumours were surprisingly low In estimating the mitotic index of a tumour a count was prepared in a part of the field showing most mitosis the object being to learn the worst of any growth

Jackson groups his tumours according to the tissue of origin—epithelium mesothelium, and endothelium —and provides many excellent photographs and photomicrographs. Where suitable material was available the histogenesis has been studied and the resulting discussions are unique and valuable The tumours recorded for the first time include carcinoma of the small intestine and carcinoma of the pancreas of the sheep thymoma in the goat embryonal nephroma in the horse, gliomas in the brain of the fowl cutaneous neurofibromatosis in the fowl probable *sympathogonioma of the base of the dog's* heart (reticulo-) endothelioma of the liver and spleen of the sheep pericardial mesothelioma in the horse and myolipoma of the vagina of the bitch A special study has been made of certain epitheliomata of fowls and sheep characterised by excessive keratinisation of the cornu cutaneum. Also an attempt has been made to classify certain cutaneous and apparently contagious neoplasms commonly found in equines in South Africa, which seem to stand half way between the granulomata and sarcomata. As many as 37 per cent. of the tumours of equines fall into this category, for which the name sarcoid ' is suggested

The tumours commonly found in the various animal species are placed in the following order of numerical importance :—

Equines—Sarcoids acanthoma melanotic sarcoma, gland-celled carcinoma

Cattle.—Acanthoma gland-celled carcinoma papilloma, false neuroma

Sheep—Gland-celled carcinoma, acanthoma

Goat—Acanthoma melanotic epithelioma.

Dog—Contagious (venereal) tumours acanthoma, basocellular epithelioma.

Poultry—Lymphocytoma gland celled carcinoma leiomyoma mixed-cell sarcoma.

Other types of tumour constituted less than about 5 per cent of the total tumours in each animal species

COLDS AND INFLUENZA

Most of us would like to know "How to Escape Colds and Influenza," but the booklet with this title, written for the laity by "a well-known bacteriologist" and "a London physician," and published by Leonard Hill, Ltd , 17, Stratford-place, London, W 1, at 6*d* , cannot be said to contribute anything very new towards solving the problem The usual counsels about diet, clothing, cleanliness, and the avoidance of chill and fatigue are set forth, and paper handkerchiefs are recommended for those who have taken the infection Unlike many, the authors put considerable faith in the usefulness of oral vaccines, but when emphasising the evils of under-ventilation and overfeeding they are on surer ground Several appendices, interspersed with advertisements, are included There is a note on the ionisation treatment of hay-fever as practised at St George's Hospital and the authors have coined in "a bombardment of germs" a new noun of assemblage Some may think that here as elsewhere too much stress is laid upon the ubiquity of germs and not enough upon resistance to infection More regard to the cultivation of physical hardihood, which is possible even in crowded cities, may be of greater prophylactic value than much gargling and spraying

A note prefacing this little book says that "the etiquette of the medical profession does not permit the authors to append their names to a medical book written for laymen, but the publishers vouch for their high professional authority"

FATTY INFILTRATION

Lately it has been shown that fatty changes in the liver and the heart are largely, perhaps entirely, the result of the infiltration of fat In view of these findings Dr John Duncan Hay has performed a series of experiments upon rabbits, investigating the effect of starvation on their kidneys, and he reported his results on Jan 14th to the Liverpool Medical Institution. The rabbits had been starved for seven days and then killed The amount of fat in the kidneys and its iodine value was estimated, a control series of unstarved rabbits being similarly investigated The histological examination in the starved series demonstrated large amounts of isotropic fat in the kidneys, mainly in Henle's tubules Chemically also the percentage of fat was shown to have been raised, and the close relationship between this and the amount seen in the sections proved that the fatty changes were largely due to infiltration The degree of adiposity of the animals was estimated by weighing the intra abdominal fat deposits, and was found also to be closely related to the amount of fat in the kidneys, estimated chemically and visually This showed that the fatty changes in the starvation kidney depended on the amount of fat available in the rest of the body for mobilisation and transport The results of the iodine value estimations were inconclusive, neither supporting nor seriously invalidating the conclusions drawn from the other findings

In a discussion that followed Dr Hay's paper Dr R T Chadwick commented on the observation that fatty infiltration took place in starved rabbits only when the animal had been originally well supplied with fat stores He had noticed in the liver and kidneys of children dying of unrelieved pyloric stenosis that there was no trace of fatty infiltration, whereas fatty infiltration was conspicuous in the same organs of children dying of unrelieved intestinal obstruction, who were usually very well nourished Dr T F Hewer also said that Dr Hay's views were in accord with what he himself had seen at autopsy in many cases He instanced the examination of two persons dying from uncontrolled hæmorrhage, one an obese woman who had antepartum hæmorrhage for four days and the other an emaciated man with a gastric ulcer The organs in the woman, who had abundant fat depôts, were heavily infiltrated with fat, while those of the man showed only a trace There seems thus to be little doubt that in the kidney at least a high proportion of the visible fat in "fatty change" is derived by mobilisation from the fat depôts of the body

Curious Advertising —A practitioner in South London writes "Surely modern ways of advertising are curious The following telegram reached me before 8 o'clock one morning and appeared before opening to be an urgent message Strongly recommend —— for personal protection and that of patients in present flu epidemic (Signed)—— This will not redound to the popularity of the firm in question "

Annual Charities Register, 1937 —We have received from Messrs Longmans, Green and Co Ltd , a copy of the forty-fourth edition of the register and digest of charities in or available for the metropolis (pp 530, 8*s* 6*d*) In the prefatory note is a remark that much care has been expended on the index, and this is evident, for there are more than 3000 items on the 56 pages of the index, making it possible to turn up any desired information at a moment's notice By dint of careful editing, revision, and concentration this book has become in the course of years a model of its kind , it is well nigh indispensable for those engaged on public work of any sort within the metropolis

"Buried Treasure"—In a leading article with this title last week a line dropped out of the penultimate sentence which should have read In any case it is surely undesirable, if material is worth publishing at all, that the only medium chosen should be an un-indexed official report of which no account is taken in the Cumulative Index, the Zentralblatt or any of the other means of reference that psychiatrists use

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Births, Marriages, and Deaths

BIRTHS

HARWARD —On Jan 23rd at Odiham, Hampshire the wife of Dr R L Harward of a son

McLAUGHLIN —On Jan 15th at Sheffield the wife of Dr A I G McLaughlin of a son

STEWART —On Jan 25th at Nuffield House Guy's Hospital the wife of Dr G R Shipley Stewart of Stafford of a daughter

TAIT —On Jan 25th, at Devonshire place W , the wife of Mr Charles Tait D O M S of Windsor of a daughter

VINE —On Jan 8th at Ootacamund S India the wife of Capt R S Vine R A M C of a daughter

MARRIAGES

MANFORD—WOODWARD —On Jan 20th at the Church of St Ethelburga Bishopsgate John Stanley Manford M B, to Vera Constance Woodward daughter of the late Mr Louis G Woodward of Hove

MURRAY—WILSON —On Jan 20th at the Parish Church, Clevedon Dr W Murray to Enid Dorothy daughter of the late J Grant Wilson M R C S , and Mrs Wilson of Clevedon

DEATHS

COLLINS —On Jan 22nd at Ulverston, Lancs Arthur Ward Collins M B Vict aged 77

JOHNSTON —On Dec 23rd on board s s *Clan Macaulay*, at or near Sydney, Alfred Lionel Johnston L R C P Edin previously in practice at Ramsgate

KITCHING —On Jan 18th at Cobham Surrey John Lea Walton Kitching F R C S Edin aged 76

MACNIDDER —On Jan 22nd at Hull James MacNidder M D Edin

SHAW —On Jan 21st at Chesham Bois W Vernon Shaw O B E , M D Oxon

WHITE —On Jan 18th Thomas Edward White M D Durh of Streatham formerly of Catford aged 79

WILTSHIRE —On Jan 18 at Bembridge Isle of Wight Harold Waterlow Wiltshire D S O M D Camb F R C P Lond

WITHERS —On Jan 23rd at Sidmouth Oliver Withers M D Durh late of Sale Manchester, aged 79

N B —A fee of 7s 6d is charged for the insertion of Notices of Births Marriages and Deaths

ADDRESSES AND ORIGINAL ARTICLES

PROGRESS IN THE TREATMENT OF FRACTURES *

BY R. SALISBURY WOODS M.D Camb F R C S Eng
FORMERLY MEDICAL OFFICER IN CHARGE OF THE FRACTURE CENTRE, 4TH LONDON GENERAL HOSPITAL

IN the last 25 years enormous improvements in treatment, comfort and results have been brought about by the mass experience of the late war But since then the advance has happily continued sick wastage from the majority of fractures has now been reduced to a minimum, and permanent disability should be rare or negligible if modern treatment is carried out.

The Pre War Position

For many years before the war it had been the custom to reduce fractures by manual traction under general anæsthesia. The injured limb was then swathed in cotton wool and put up in a plaster-of Paris casing But, as the initial swelling subsided the loose layer of wool allowed of considerable movement at the site of fracture Moreover no attention was paid to the function of the limb which merely lay in bed and suffered atrophy from disuse. Even if and when crutches were employed no normal weight-bearing was allowed or indeed possible until sound union had occurred.

RESTORATION OF FUNCTION

For some years before the war however the doctrine of early massage and physiotherapy had become fashionable and plaster of Paris fell into desuetude. Padded wooden splints like the back splint with foot piece and side-pieces for the leg the long Liston for the thigh and the internal angular for the forearm became standardised. These offered the attraction of easy partial removal in order that the limb could be given massage and electricity the aim of which was to counteract the stiffness of neighbouring joints and weakness from disuse which were found naturally to follow a fracture But restoration of function to the injured person was very painful and slow In major lower limb fractures weight bearing was not attempted (however gingerly) until after 8–10 weeks the atrophied muscles required at least a further 2 months to regain their full power and joints were often impaired for life Loss of employment and sick wastage lasted not uncommonly for at least 6–12 months and as surgical specialist to insurance companies I still see such results In fractures of the femur however an advance had been made in that the principles of suspension and axial traction were brought into play by the Hodgen frame splint in conjunction with the weight and pulley

FIXATION OF FRAGMENTS

Just before the war open operation and fixation of the fragments by plates and screws wires or intramedullary pegs had come into vogue through the work of Sir Arbuthnot Lane Dr Lambotte and others and in 1915 Hey Groves's book on Modern methods in treatment of fractures was still mainly concerned with operative treatment although he decried it for open fractures During the war every gunshot fracture— G S W with fracture — was necessarily open and infected. Consequently the wound was dealt with by excision of skin edges and toilet of the track, but no internal splinting was attempted. This was on the principle that no open fracture should be plated, owing to the aggravation and prolongation of sepsis by the introduction of foreign bodies

CONTINUOUS TRACTION

As operative fixation was therefore contra indicated in treating the wounded the principle of continuous traction probably adapted from Hodgen's splint regained its pride of place and developed out of all recognition Traction reached its height of fame and efficiency when used for fractures of the femur in conjunction with the Thomas's splint suspended and counter poised from a Balkan beam. The actual pull was applied either by adhesive media or by direct skeletal traction

Adhesive media.—Strips of adhesive plaster on each side of the limb leading off to a stirrup and weight over a pulley These were apt to snap suddenly after several weeks causing great pain and alarm and needed renewal. They also irritated the skin and could not of course be applied at all where the surface was badly involved below the knee Nevertheless the method was generally satisfactory for fractured femurs and it was the most widely used

Sinclair's foot piece consisted of a wooden sole fixed firmly to the dorsum of the foot by overlapping strips of glued tape From its margins small rings enabled the coupling of a tractile force Many swore by this but I confess I swore *at* it because—perhaps from lack of previous continuity of treatment and ideas—a number of cases arrived at the centre where I was employed with sloughing of the skin and even of the tendons of the dorsum of the foot At any rate it was not fool proof

Direct skeletal traction took the form of (1) the ice tong calliper gripping into femoral condyles (2) Steinmann's pin, transfixing the tubercle of the tibia; and (3) Finochietto's stirrup passing anteriorly to the tendo Achillis and pulling on the superior surface of the os calcis It enabled far greater force to be applied in refractory cases than could be withstood by adhesive devices Personal experience of all varieties showed that each had its virtues For instance Finochietto's stirrup was reserved for cases where the skin above was so severely damaged that an extension could not otherwise be applied The danger of sepsis supervening was exaggerated even in cases of gunshot wounds, and we certainly did not meet it This factor of *suspension* added enormously to the comfort of the patient, especially in the dressing of posterior wounds and the use of the bed pan.

Continuous traction gave splendid results and in the fracture wards of the 4th London General Hospital (Woods 1923) despite sepsis and severe comminution the average shortening was less than 1 cm which does not interfere with function thanks to compensatory tilting of the pelvis Ambulatory treatment in a walking calliper followed in 4–8 weeks with all the benefits of physiological activity The principle was also used *in fractures of the upper* limb It was simple safe and convenient on active service for the Thomas's splints were interchangeable for right or left limbs, and the same pattern could be used in the trenches at the base or in England. Continuous traction—from a Kirschner wire through the tubercle of the tibia—is even now the best modern treatment for fractures of the femur

Post-war Progress

DIRECT OPERATION AND INTERNAL SPLINTING

Nevertheless surgery has its fashions and on returning to civil life with complete asepsis and

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A lecture to the Cambridge University Medical Society "every modern convenience" there was a tendency to maintain the reduction of difficult fractures by the attractive gadgets that were at hand for the purpose of internal splinting Most of us resorted to them, and on the whole the patients did well. Anything definitely fixative seemed preferable to months of continuous traction Only really awkward fractures were operated upon, when the splints in use failed to meet the case, and compound ones never

A few examples may illustrate operative treatment

CASE 1 —A very muscular undergraduate on Nov 7th, 1924, sustained a comminuted fracture of his right femur *in its middle third while playing rugger* It was put up on a Liston splint, and he was transferred at about 6 P M to a nursing home and *referred to me* A Thomas splint, with 12 lb strapping extension, was applied and suspended from a Balkan beam Nov 9th X ray report unsatisfactory Nov 11th open operation A 10 in incision on lateral aspect of right thigh, fragments levered into accurate alignment by lion forceps, main shaft repaired by Lane's plate and 6 screws The third fragment (on the postero medial aspect) was then wired to the reconstructed shaft (Fig 1) Nov 17th flexing iron added to Thomas's splint, knee movements good Nov 20th *extension removed* Dec 20th up on crutches and a walking calliper, after 6½ weeks June 8th, 1925 knee movements full, walks without a limp, has played tennis

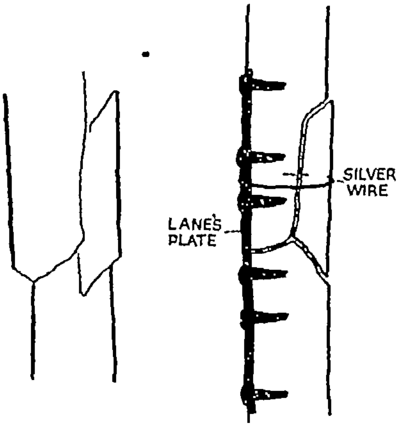

FIG 1 (Case 1) —Comminuted fracture of right femur (anteroposterior view) fixation with Lane's plate the third fragment being wired to reconstructed shaft.

It is relevant here to recall that in 1922 Hey Groves had written "I believe that operation ought to be the routine treatment for the majority of complete fractures of the shaft of the femur in adults of active life"

CASE 2 —A schoolmistress, aged 32, on Dec 18th, 1926, received a fracture of the upper end of tibia, into the knee joint, in falling from bicycle Put up on a Thomas's splint where she lay, 12 lb extension applied on admission to a nursing home Dec. 23rd radiograms showed a fracture of the right tibia into the middle of the knee joint, *with outward dislocation of outer fragment* of tibia on femur, the joint completely unstable, and torsion of articular surface of tibia Dec 24th fracture exposed by operation, and outer edge of tibial fragment united by two short oblique plates to the main shaft, after much difficulty in manœuvring, knee joint full of blood, which was evacuated, and the capsule was sewn up, fascia and fat brought over screws She was put back on Thomas's splint Gentle movements to the knee joint after a week She went back to teaching in 2 months In 1936 she could practically sit on her heels while kneeling and there was no disability She does climbing and plays tennis and other games

CASE 3 —On Feb 25th, 1928, an undergraduate playing rugger *suffered* a severe backward dislocation of his ankle joint, with vertical fracture of shaft of tibia into joint, and of lower third of fibula which occurred when he was tackled, while turning to kick. The dislocation was easily reduced, but the problem was how to promote *early movement* when upper mortice for the astragalus was entirely unstable In the contemporary view, such movements would shed osteoblasts into the disrupted joint, on the other hand, the avoidance of this by prolonged immobilisation would also have produced a stiff ankle *from adhesions It therefore* seemed proper to secure the mortice by open operation, and then to begin early movements

Feb 29th operation with axial incisions on medial and lateral aspects of lower third of leg, both fractures were exposed In that of the tibia, the periosteum was sewn tightly over, to clamp the fracture, after more accurate reposition In the fibula the position was improved by moving some intervening muscle, and the fragments were secured by stout silver wire, suspension in Neville's swing cradle Ankle movements from very beginning Regained almost complete range in 10 days

April 17th Mr C H Frankau saw him in London and wrote "The movements are practically perfect" April 19th started walking with shoe raised on the inner side Eventually no thickening, no disability, and *played rugger again* When seen in 1935 after 7½ years, it was impossible to distinguish his injured ankle from its fellow

It may be recalled that in 1908 Clinton Dent, writing on the after effects of [illegible] injuries among the police, stated that he "had difficulty in remembering a case of Pott's or Dupuytren's fracture which had *sufficiently recovered to resume* police work."

BÖHLER'S METHODS—MAINLY NON OPERATIVE

In the last few years the teaching of Lorenz Bohler of Vienna has revolutionised the whole treatment of fractures The cardinal features are —

1 Local or regional anæsthesia

2 Immediate and accurate reposition of the displaced bone ends

3 Absolute fixation of the reduced *fragments* until union has occurred, by [illegible] plaster-of Paris splint, helped in some cases by [illegible] wires inserted through the shaft at each end, and embedded in the plaster

4 Immediate *functional restoration of movements,* including (in the lower limb) weight-bearing where possible, while the necessary fixation is maintained.

5 No open operations, even in compound or "closed" fractures except where there is separation of the fragments—e.g., of the olecranon or patella—or in some fractures involving joints, in which the joint surface is twisted—e.g., upper and lower ends of humerus or in upper end of radius, in subcapital intra articular fractures, of the neck of femur and I might add, in Case 2, of the upper end of the tibia the articular surface

Bõhler includes among "errors in the treatment of recent open fractures" —

10 Setting the fracture in the open wound by means of levers and instruments This is liable to force infective material into the spongy bone and marrow cavity

11 Bone suture by the use of large foreign bodies, particularly plates and screws Infection and osteomyelitis are the common results of this

And further he states —

"Operative treatment involves great dangers, because in every fracture the soft parts are also severely injured and because many vessels have been torn by the causative violence At the operation, the bone fragments must be widely exposed, and further vessels torn Most dangerous of all is the operative fixation of fragments in open fractures—and this according to many surgeons is the very object of the operation"

In normal tissues, bone operations conducted with suitable technique are well nigh without danger Of ununited fractures, Böhler says —

"Faulty position of the fragments and interposition of soft parts may be the cause Most frequently it lies in unsuitable treatment" Primary operative treatment by means of buried foreign bodies, particularly Lane's plates, is the frequent cause of pseudarthrosis Henderson of the Mayo Clinic found that in 211 cases operated on for pseudarthrosis 66 per cent were due to fixation with Lane's plates, and Scudder found that 70 per cent of 32 cases resulted from the same cause

Gray of San Francisco has examined 34 725 cases and has found that the period of recovery of fractured femurs treated by operation was twice as long as that of those treated conservatively; that the expense of treatment was three times as great and the amount of compensation doubled In the lower leg of those subjected to operation, expense and compensation were about 50 per cent. higher than in the others.

ORDINARY SPLINTS NOW OBSOLETE

These really basic requirements, as preached by Böhler of accurate reduction fixation and function are not satisfied by most of the splints whose employment was a standard routine in hospitals until the last few years, and which are still in current use in a great many places. To take as a common example the back splint with foot piece for fractures of the tibia and fibula, with or without Cline's side splints, and whether suspended from a Neville's cradle or not, this contraption never properly immobilised the fragments of a *fractured tibia* and fibula, and was useless for transport in comfort. The reduction was usually far from accurate, or at any rate was not secure the resulting distortion of vessels produced much oedema and the vertical foot piece denied the natural position to the foot To remedy this the limb was subjected to daily massage with or without electricity which necessitated interference with the splint and with the fractured leg and could hardly have contributed to the absolute fixation that is now held to be essential in treatment No function was attempted for weeks and no weight bearing until sound union had taken place in about 2 months.

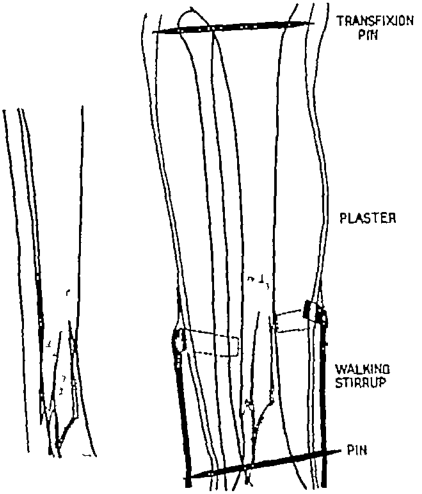

FIG 2 (Case 4)—Multiple fractures of right tibia (antero-posterior view) Left: after manual traction only; right: after 5 weeks weight bearing beginning within one day of operation Fixation with transfixion pins and plaster cast position being maintained by 45 lb. of traction with Kirschner wire through os calcis until the cast had set.

In modern treatment fractures of the tibia and fibula are accurately reduced under local anaesthesia by screw traction if necessary and the position absolutely maintained by a non padded plaster of Paris splint of Cellona bandages which sets immediately In simple and particularly transverse fractures walking may be begun almost at once In oblique and multiple fractures where telescoping is to be feared, ambulatory treatment is nevertheless possible by transfixion fixation of the fractured tibia by means of stout transverse steel pins above and below the fractures whose projecting ends are embedded in the irregular cylinder of plaster The saving in sick wastage and hospitalisation is nothing short of dramatic, and *function* replaces the usual dreary and expensive ritual of months of physiotherapy

CASE 4.—An undergraduate who was playing hockey on Oct 23rd, 1936 was tripped by a stick and fell sustaining severe injury to his left leg Tremendous swelling over the lower half of the tibia; ankle inverted obvious crepitation By manual traction, under local anaesthesia, the fractures were reduced and the limb put up in a cellona cast from sole to mid thigh. Oct 24th: radiography showed multiple fractures (Fig 2) and although the position had obviously been greatly improved there was some angulation of the tibia laterally; and even the fibula itself though intact was bent outwards It was therefore decided that this must be further improved and sick wastage minimised by operation.

Oct 25th: the plaster cast was removed under anaesthesia, the leg cleaned up, and sterilised. A Kirschner wire was drilled through the os calcis and screwed taut in a Max Page stirrup. This was then connected to a screw traction apparatus, with spring balance the knee being flexed over a bar in a Böhler extension frame The fragments were subjected to a 45 lb pull, and manipulated into alignment The angulation being corrected, tension was maintained while stout transfixion pins were bored through the tibia above the ankle joint and through the tuberosity and left with their ends projecting The limb was then put up in a mid thigh cellona cast by the usual technique thereby embedding the pins and the Kirschner wire in a rigid irregular cylinder The wire was then withdrawn (releasing traction) and the punctures sealed. The alignment appearing to be perfect a walking stirrup was applied and the projecting spikes padded with plaster knobs. Patient was radiographed again and alignment now seen to be perfect.

Oct 26th: he was very well toes warm; no oedema. He was encouraged to walk with sticks about 10 yards and back again without discomfort *20 hours after operation*

Oct 31st: he walked about when he felt like it and had already walked up and down the stairs without help. He was discharged to go back to college 6 days after operation.

Nov 12th: he had dined in hall, attended lectures and walked about the town He had no pain and had never used a crutch Radiograms show *perfect* [illegible] of tibia (Fig 2) with slight curvature of fibula

By analogy with a similar case published [illegible] there was every reason to hope that, when the [illegible] was removed about 10 weeks after operation, the [illegible] would regain full movements of the knee and ankle [illegible] immediately Further the usual weeks or [illegible] of massage and electricity [illegible] if not entirely eliminated by the [illegible] of the limb from the [illegible] as regards the troublesome oedema [illegible] fractures by the temporary [illegible] Elastoplast puttee to the [illegible] the cellona cast is removed

Jan 21st 1937 [illegible] the knee [illegible] applied after 8 weeks [illegible] further 3 weeks the patient being [illegible] The fracture soundly unit[illegible] and there disabilit[illegible]

Transfixion fixation may also be used by means of Kirschner wires, drilled through the radius and olecranon, for those fractures of the forearm in which perfect reduction cannot otherwise be attained or maintained.

Other examples of obsolete splinting are the common splints used for a Colles's fracture, such as Carr's, "cock up," &c These, too, were usually employed after imperfect reduction, and anæsthesia, if any, was general rather than local They were rarely comfortable, lacked complete control, and moreover were also removed for daily massage, and later for movements as well, in the belief that a stiff wrist joint would follow immobilisation The hand was not used for up to 3 weeks Nowadays, immediate reduction is followed by complete fixation in a non padded cellona splint, with the wrist joint half way between flexion and extension, and between pronation and supination, for 3–4 weeks The fingers are moved immediately the plaster has set, followed by pronation and supination of the forearm The shoulder and elbow joints are moved with the hand behind the back, and over the head. Exercises with a puller machine may begin on the third or fourth day It is only necessary to carry the arm in a sling for a few days, and after 2–3 days the hand can be used for light duties, such as writing and sewing, and for woodcutting in 7 days It is particularly pleasing to women to be able at once to arrange their hair and to tie their aprons The more the patient works, the better his progress When the cast is removed the movements at the wrist are full, free, and painless, and the ultimate disability nil.

SOME DIFFICULT FRACTURES

Fractures of the navicular (scaphoid) were formerly regarded as very intractable, liable to non union, and operation for removal often followed. Modern treatment in recent cases is similar to that of a Colles's fracture, except that the wrist is put up slightly extended, and in ulnar abduction, and that it is left absolutely immobilised for at least 6 weeks Radiography is then repeated, and obstinate cases *may* take as long as 4 months Böhler himself was successful in obtaining bony union and complete mobility of the wrist in 158 cases, without a single exception The delicate blood supply of the scaphoid has to be re established from the peripheral into the central fragment, and if any movement of the wrist is permitted, the fragments glide over one another and the growing vessels are severed. Consequently the orthodox treatment of massage and passive movement should never be employed. Indeed, it was wholly responsible for the previously bad results

Fractures of the shaft of the femur—The principle of continuous traction, elaborated from the experience of the late war, still holds the field here, save that direct skeletal traction has developed, and practically replaced the alternative methods depending on adhesive plaster, or glue—e g, Sinclair's foot piece

A transfixion pin is introduced through the tubercle of the tibia under local anæsthesia It is more rapid, involves less movement of the fractured limb (shock and damage), and enables much greater tractile force to be exerted The pin is removed in 3 weeks, lest the knee joint should become lax, and an adhesive extension is then adopted, but the plaster should include the whole thigh, so that it grips the whole of the muscle cylinder that causes shortening Another is similarly applied to the leg Each extension is attached to separate weights over pulleys and we have a picture of war time axis traction Weight bearing is usually safe in about 8 weeks, but is not allowed until the patient can lift the limb easily and without pain, and until the site of the fracture is no longer tender on pressure A firm supporting puttee of elastoplast is then applied for 3 weeks, from the webbing of the toes to the thigh above the fracture This is a great advance in the prevention of the troublesome œdema that followed in fractures of the lower limb

Fractures of the neck of the femur—It is perhaps here that modern treatment shows the most dramatic progress Formerly it was the rule to apply weight and pulley extension, the limb being widely abducted. Where the general condition allowed of sufficient time, bony union took place with some shortening, but the patient was crippled mainly by the ankylosis of the hip joint, following imperfect reduction and prolonged immobilisation, but many died of hypostatic pneumonia In 1915 Cathcart wrote "If there is no union at the end of 12 weeks, the patient must depend on bearing his weight upon ligaments" Statistics of 1922 show that barely 25 per cent. ever recovered good function In young and active patients, surgeons were groping for operative measures which would prevent the disabling sequel of coxa vara and allow earlier movements, but they were content to drive into the neck of the femur from the trochanter nails or pegs that eventually became loose. In 1916 Hey Groves foreshadowed modern technique when in criticism of this he said "What is required is a *massive* peg, capable of filling up the neck of the femur, supporting it at the correct angle with the shaft, and stimulating the formation of new bone for the natural process of repair" This requirement is now fulfilled by Smith Petersen's pin, which originally was introduced into the neck of the femur by free exposure of the hip joint, involving a big operation More recently, however, Sven Johannson in Göteborg and M. Jerusalem in Vienna have independently worked out an extra articular method. The pin is triradiate in cross section, and is perforated so that it is thereby guided into position along a previously introduced wire, and driven home with a special hollow punch This may, however, cause separation of the fragments, so they are reimpacted lightly by a few final taps from an "impaction punch" The various stages are verified by X ray examinations The results are excellent, even in the aged, and the dangers minimised by using this method.

After 3 or 4 weeks the hip, knee, and ankle can be moved through a full range, and in 6 weeks the patient should be able to walk really well.

Conclusion

The treatment of fractures is an extremely large subject, and it has only been possible roughly to sketch the outlines of improvements evolved in the last 25 years At present the best results appear to be generally obtainable from non operative methods of safety and improved technique, which in many instances allow of natural function immediately By these measures, our generation will benefit in a manner unknown to our predecessors, in reduction of the pain, sick wastage, and lasting disability, that were previously endured by fractured humanity

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A NEW FACTOR IN THE PRODUCTION AND CURE OF CERTAIN MACROCYTIC ANÆMIAS

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It is well known that Marmite and similar autolysed yeast preparations are active curatively in tropical and other macrocytic anæmias in which there is little or no evidence of alteration in gastric secretion (Wills 1934 Vaughan and Hunter 1932) Further such yeast extracts are active hæmopoietically in true pernicious anæmia after incubation with normal gastric juice (Strauss and Castle 1932 Groen 1935) Castle's theory postulates the formation of a liver hæmopoietic principle from the interaction of an extrinsic factor present in certain foodstuffs with an intrinsic factor present in normal human gastric juice This liver principle has recently been isolated in a relatively pure form known as anahæmin by Dakin and West (1935 1936) These workers point out that anahæmin because of its method of preparation can have no chemical similarity to the liver factor earlier isolated by Cohn McMeekin and Minot (1930) which these authors had shown also to be active curatively in pernicious anæmia The nature of the yeast factor or factors is unknown

In view of the fact that autolysed yeast is a potent source of Castle's extrinsic factor it has been suggested that the principle in yeast active in the treatment of tropical macrocytic anæmia is identical with the extrinsic factor of pernicious anæmia and that tropical macrocytic anæmia is therefore a deficiency state due to a lack of this extrinsic factor in the diet (Wills 1934) The similarity of the blood picture in pernicious anæmia and in the tropical condition and the fact that liver preparations are curative in both lend support to this view There are however certain difficulties in accepting this theory If tropical macrocytic anæmia is due to a lack of extrinsic factor in the diet then the final deficiency in the body must be in the liver principle In classical pernicious anæmia a deficiency in liver principle is associated not only with a macrocytic anæmia but also with an increased bilirubin content of the blood and an increased output of urobilin in the urine In uncomplicated tropical macrocytic anæmia although the anæmia is macrocytic there is no increase of blood bilirubin or urinary urobilin (Wills and Mehta 1930) There is also no increase in blood bilirubin in the rhesus monkey suffering from nutritional anæmia. Further it is a remarkable fact that no description of nervous lesions in the tropical condition has yet appeared

With a view to investigating the problem of the nature of this nutritional macrocytic anæmia and of the hæmopoietic factor present in yeast the animal experiments described below were undertaken.

In a previous paper (Wills and Stewart 1935) the production of a macrocytic anæmia in the rhesus monkey has been described and the reason given for considering the anæmia as the animal counterpart of tropical macrocytic anæmia. The same methods were used in the present work. The activity of any extract was judged by the height of the reticulocyte response and the rise in the red cell count and the hæmoglobin percentage in a properly controlled animal. In view of the work of Miller and Rhoads (1933 1935) on the failure of dogs in which a macrocytic anæmia had been induced by dietetic means to respond to parenterally administered liver extracts (the dogs were infected with Bartonella) the effect of intramuscular administration of the liver extract Campolon on our anæmic monkeys was first investigated Campolon was used as it is known to be active curatively when given parenterally in the tropical macrocytic anæmia of man Animals so treated responded well though surprisingly large doses were often necessary to induce maximal responses

Whilst this work was in progress, the liver factor curative in true pernicious anæmia became available in the highly purified form known as anahæmin. It was therefore desirable to determine whether anahæmin was also active curatively in the nutritional macrocytic anæmias of the rhesus monkey It was found that a sample which was reported by Ungley (private communication) as active in two cases of pernicious anæmia was absolutely inactive, even in large doses in the macrocytic anæmia of our experimental animals. Five monkeys were treated: two received 100 mg daily for 10 days during which time there was no reticulocyte response and the red cell counts of one animal fell and of the other remained stationary after a further 6 days in which their condition remained unchanged both animals made excellent responses to campolon. The activity of the relatively crude liver extract campolon and the complete inactivity of the purified factor anahæmin both given parenterally suggest that the causation of nutritional macrocytic anæmia of monkeys cannot be explained satisfactorily by assuming a simple lack of Castle's extrinsic factor in the diet and therefore of the liver principle in the body It would appear that some other factor is involved.

The relation of the yeast factor to the vitamin B_2 complex has also been investigated This was rendered necessary by the recent work on the dual nature of this complex and the light labile character of the flavin component It was first shown (unpublished) that in the rhesus monkey flavin was not the hæmopoietic factor which agrees with the earlier work of Groen (1935) and Ashford et al. (1936) who showed that flavin was not the extrinsic factor in pernicious anæmia. The separation of the liver and yeast hæmopoietic factors from the complement or vitamin B_4 component of the vitamin B_2 complex was next attempted by applying the method of Dakin and West (1935) for separation of anahæmin from crude liver extracts Acidulated yeast extracts which had been shown to be active in the cure of the monkey anæmia were first treated with calcium acetate and 70 per cent alcohol which removed considerable amounts of relatively inactive material The monkey hæmopoietic factor was present in the filtrate A certain amount of activity appeared to have been lost as the dose of filtrate necessary to produce a maximal response corresponded to larger amounts of dried yeast than those used in the preparation of a curative dose of the untreated extract These yeast filtrates and also the liver extract campolon were then fractionated by use of Reinecke salt which precipitates anahæmin This method in our hands gave disappointing results Thus using yeast extracts in two monkey experiments the method failed to inactivation of both soluble and insoluble fractions In a third experiment the soluble fraction, which should not contain anahæmin, was found to be active in the cure of the monkey anæmia Fractionation of campolon in the same way led to complete inactivation Similar uncertain results have been obtained by other workers attempting to separate anahæmin by the Reinecke method.

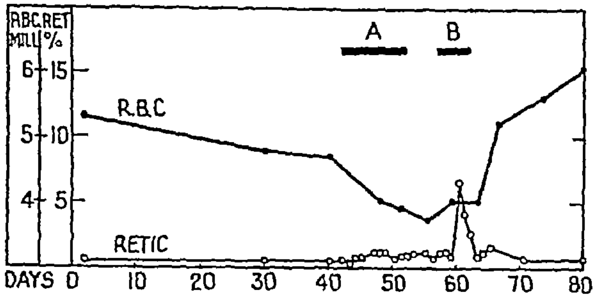

FIG 1 —Monkey No 7 Effect of treatment on red cell and reticulocyte counts
A = anahæmin (1100 mg) B = campolon (20 c cm)

Very good results were, however, obtained by using saturation with ammonium sulphate as a means of fractionation Both yeast filtrates and campolon were then separated into fractions insoluble and soluble in saturated ammonium sulphate The two fractions from campolon were tested on both men and monkeys, and those from yeast on monkeys only The insoluble fraction from campolon, which would contain any anahæmin present, induced an immediate remission in two untreated controlled cases of pernicious anæmia, whereas this fraction was completely inactive in monkeys The same monkeys subsequently responded to similar parenteral administration of the soluble fraction. Similarly the insoluble fraction from the yeast extract, which should contain any anahæmin like bodies present in yeast, was completely inactive in anæmic monkeys, who responded to treatment with the soluble fraction both fractions were in this case given by mouth. The soluble yeast fraction, unlike the soluble fraction from campolon, was inactive when given parenterally to one monkey, this animal however responded when enormous doses of new anahæmin, 200 mg daily for 10 days, were given immediately after the yeast injections

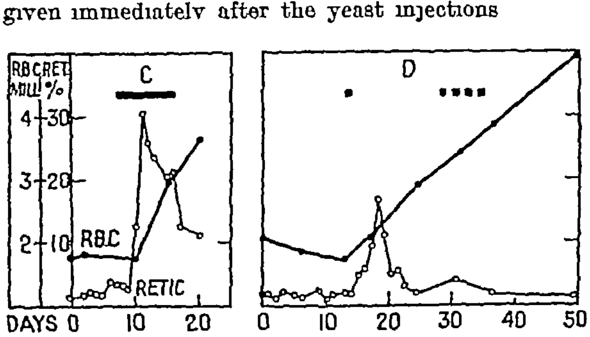

FIG 2 —Effect of campolon extract, insoluble in ammonium sulphate on two patients
C = $(NH_4)_2SO_4$ insoluble extract from 102 c cm campolon
D = $(NH_4)_2SO_4$ insoluble extract from 20 c.cm campolon
(each black square represents 4 c cm)

CASE REPORTS HUMAN AND MONKEY

A few illustrative cases are described, a full record will appear elsewhere

For brevity the following *abbreviations* are used Red blood cells, R B C , the figures express millions per c mm Hæmoglobin Hb figures express percentages, 100 per cent being equivalent to 14 g hæmoglobin As the red cells of the monkey are smaller than those of man, the uncorrected colour index for healthy animals is generally about 0 69, corrected for the monkey standard of 6 million red cells and 14 g hæmoglobin the colour index is approximately 0 84 In the text days are reckoned from the commencement of any one treatment

ANAHÆMIN AND CAMPOLON

MONKEY No 7 (Fig 1) was rendered anæmic by feeding deficient diet, on which he remained throughout experiment Treated with campolon in February, 1936 made a good recovery April R B C 6 495, Hb 90 per cent Relapsed July 13th, R B C 4 530, Hb 64 per cent Anahæmin parenterally 100 mg daily for 10 days 7th day R B C. 4·055, Hb 55 per cent 14th day R.B C 3 970 Hb 58 per cent Reticulocytes never above 1 per cent July 29th campolon parenterally, 4 c cm daily for 5 days 3rd day R B C 4 260, Hb 59 per cent 5th day reticulocytes 5 7 per cent 10th day R B C 4 975, Hb 70 per cent 16th day R.B C 5 590, Hb 75 per cent 24th day R B C 6 135, Hb 82 per cent No response to anahæmin, good sustained response to campolon Four other monkeys failed to respond to treatment with anahæmin, but later responded to campolon or other active extracts

CAMPOLON FRACTIONATED WITH AMMONIUM SULPHATE INSOLUBLE AND SOLUBLE FRACTIONS

MAN aged 64 (Fig 2) Uncomplicated pernicious anæmia with signs of subacute combined degeneration Histamine test meal complete achlorhydria Van den Bergh, indirect reaction 4 units Nov 10th, 1936 R B C 1 715, Hb 48 5 per cent Nov 16th R.B C 1 745, Hb 51 per cent Reticulocytes highest value 1 3 per cent Nov 17th started treatment with insoluble fraction the precipitate derived from 12 c cm original campolon given daily for 7 days and that from 6 c cm daily for 3 days Marked clinical improvement after 1st day 6th day reticulocytes reached maximum value of 30 per cent 10th day R B C 2 933 Hb 58 per cent Dose stopped 15th day R B C 3 523, Hb 72 per cent The reticulocyte peak was higher than the expected value and the red cells increased at the rate of 100,000 a day Excellent response to treatment with ammonium-sulphate insoluble fraction of campolon

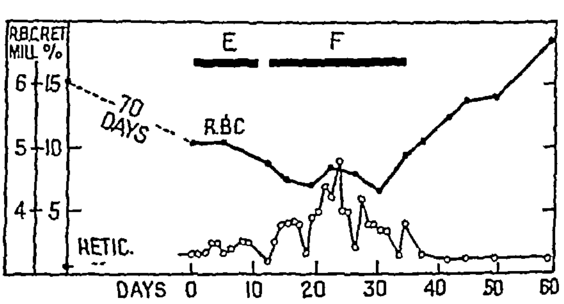

FIG 3 —Monkey No 50
E = $(NH_4)_2SO_4$ insoluble extract from 40 c cm campolon
F = $(NH_4)_2SO_4$ soluble extract from 110 c cm campolon

WOMAN aged 59 (Fig 2) Uncomplicated pernicious anæmia with signs of subacute combined degeneration Histamine test meal complete achlorhydria Van den Bergh, indirect reaction 2 units Oct 29th 1936 R B C 1 980, Hb 50 per cent Nov 2nd R B C 1 790, Hb 51 per cent Nov 9th R B C 1 700, Hb 50 per cent Reticulocytes highest value 1 8 per cent Given a single dose of the insoluble fraction, the precipitate from 4 c cm of campolon 5th day R B C 2·025 Hb 58 per cent, reticulocytes 10 0 per cent 6th day reticulocytes 18 per cent 8th day R B C 2 193 Hb 60 per cent A good reticulocyte response and a rise of 0 493 million red cells in 8 days, which though not maximal is a good rise after a single dose derived from only 4 c cm of original campolon Four more similar doses were given and on the 22nd day from the original dose the red cells had risen to 3 915, Hb 72 per cent This represents a rise of 2 2 millions in 22 days. Excellent response to treatment with ammonium sulphate-insoluble fraction of campolon.

MONKEY No 60 (Fig 3) On June 11th 1936 diet commenced R.B C 6·610 Hb 96 per cent Oct 21st R.B C 3 950 Hb 59 per cent started insoluble fraction parenterally amount derived from 4 c.cm. untreated campolon daily for 10 days. Reticulocytes maximum value 2·4 per cent 10th day: R.B C 3 605 Hb 56 per cent. Three days later as no response started treatment with soluble fraction for first 7 days daily dose derived from 4 c.cm untreated campolon; dose then increased to yield from 8 c.cm. campolon for 10 days 4th day: R.B C 3 465 Hb 57 per cent reticulocytes 3 6 per cent 8th day: reticulocytes 4·0 per cent but no rise in count so dose increased 11th day R.B C 3·610 Hb 50 per cent reticulocytes 8 3 per cent Reticulocytes remained up for further 8 days 22nd day R B C 3 700 Hb 58 per cent 27th day: R.B C 4·420 Hb 67 per cent The plateau type of reticulocyte response and slow rise in R B C count suggest that the dose was not optimal No response to treatment with ammonium sulphate insoluble fraction of campolon: suboptimal response with soluble fraction

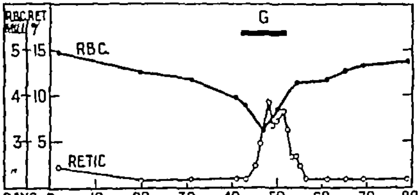

FIG. 4.—Monkey No 7
G = (NH$_4$)$_2$SO$_4$-soluble extract from 80 c.cm campolon.

MONKEY No 7 (Fig 4) On Oct 16th 1936 had been on diet for many months and used experimentally several times before R.B C 4 060 Hb 70 per cent Nov 24th R B C 3 900 Hb 57 per cent reticulocytes 0 3 per cent Nov 26th: R B C 3 760 Hb 55 per cent reticulocytes 0 2 per cent Started treatment with soluble fraction equivalent to 8 c cm original campolon 5th day: R.B C 3 230 Hb 48 per cent reticulocytes 4 7 per cent 6th day: reticulocytes 9·0 per cent and values stayed up till 10th day Dec 3rd: R B C 3·670 Hb 50 per cent 12th day: R.B C 4 270 Hb 60 per cent. 19th day: R.B C 4·44 Hb 67 per cent very few reticulocytes Good reticulocyte response and rapid initial rise in red cell count after treatment with ammonium-sulphate-soluble fraction of campolon by mouth

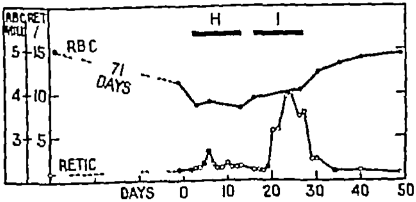

FIG. 5.—Monkey No 53
H = (NH$_4$)$_2$SO$_4$ insoluble extract from 600 g yeast.
I = (NH$_4$)$_2$SO$_4$-soluble extract from 600 g yeast.

ACIDULATED YEAST EXTRACT FRACTIONATED WITH AMMONIUM SULPHATE AFTER TREATMENT WITH (a) CALCIUM ACETATE AND 70 PER CENT ALCOHOL; (b) 80 PER CENT ALCOHOL: INSOLUBLE AND SOLUBLE FRACTIONS

Oral administration of (a)

MONKEY No 53 (Fig 5) Started deficient diet on June 12th 1936: R B C 4·675 Hb 70 per cent Oct 20th: R.B C 3 040 Hb 54 per cent Started treatment with insoluble fraction, dose derived from 60 g dried yeast given daily by mouth for 10 days No response Maximal reticulocyte value 2 7 per cent 10th day: R.B C 3 610 Hb 57 per cent Three days later as the condition was unchanged treatment was started with similar doses of the soluble fraction. 3rd day R.B C 3·610 Hb 57 per cent reticulocytes 1·6 per cent 6th and 7th days reticulocytes 9 1 per cent and 9·4 per cent respectively 10th day R.B C 3 975 Hb 61 per cent reticulocytes 7 4 per cent 17th day: R B C 4 553 Hb 67 per cent reticulocytes 0 2 per cent 23rd day: R.B C 4 745 Hb 75 per cent No response to the insoluble fraction A good reticulocyte response to soluble fraction and a steady but rather slow rise in red cells

Parenteral administration of soluble fraction from (b) followed by anahæmin

MONKEY No 62 (Fig 6) had responded to the ammonium sulphate-soluble fraction of our yeast extract so after being run out again was selected for a trial of this fraction by the parenteral route Dec 8th 1936: R B C 3 825 Hb 59 per cent. reticulocytes 0 2 per cent Dec 11th: R.B C 3 785 Hb 60 per cent reticulocytes 1 6 per cent Injections started daily dose equivalent to 50 g dry yeast for 10 days 5th day: R B C 3 510 Hb 57 per cent. reticulocytes 1·0 per cent 8th day R B C 3 200 Hb 45 per cent., reticulocytes 2·6 per cent 11th day: R.B C 2 905 Hb 40 per cent reticulocytes 1·0 per cent No response and as animal was going down rapidly treatment with anahæmin was started 200 mg daily for 10 days 7th day R B C 3 175 Hb 44 per cent reticulocytes 4 5 per cent Reticulocyte counts remained high till 10th day when value reached 10·3 per cent 11th day: R.B C 3 715 Hb 52 per cent reticulocytes 2 3 per cent 15th day: R B C 4 805 Hb 68 per cent., reticulocytes 0·5 per cent No response to parenteral administration of soluble fraction of acidulated yeast alone (active by mouth) but excellent response when enormous doses of new anahæmin were given immediately after previous treatment

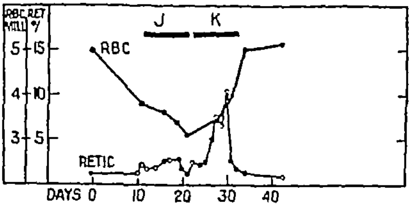

FIG 6.—Monkey No 6
J = (NH$_4$)$_2$SO$_4$-soluble extract from 600 g yeast
K = anahæmin 20 c.cm

DISCUSSION

The work described above suggests that at least two hæmopoietic factors are present in all those extracts (e.g liver autolysed yeast extracts, and wheat germ) which are active both in true pernicious anæmia in man—some only after incubation with normal gastric juice—and in the nutritional macrocytic anæmia of the monkey It is only when the principles concerned are obtained in a relatively pure form that their different action becomes clear It is not suggested that monkeys do not require the liver principle contained in anahæmin but only that the anæmia under discussion is not produced by a simple lack of this factor and cannot therefore be due solely to absence of Castle's extrinsic factor in the diet as originally suggested This monkey anæmia appears to be due in part at least, to the lack of some other factor at present unidentified It seems possible however that the two factors are concerned both in the monkey anæmia and in pernicious anæmia, and there is some evidence that this view is correct For example, the more sustained response in the monkey to the crude extracts in comparison with the response to the more highly purified fractions, even when these are given in doses derived from far larger amounts of the parent substance (yeast or liver) than those used in the preparation of the cruder extracts, points in this direction The fact that one monkey responded well to very large doses of anahæmin when given immediately after the parenteral injection of the monkey fraction from yeast also suggests that this principle is necessary for normal hæmopoiesis in the monkey The crude extracts may well contain both factors, campolon certainly does If then there is in the monkey suffering from macrocytic nutritional anæmia a deficiency of both factors, but a relatively greater lack of the new factor, then the administration of this latter may activate the small supply of the liver principle still available in the body The liver principle thus activated will cause an initial rise in the red cell count, which however will not be sustained when the small supply of the liver principle is exhausted. Accepting this explanation of the action of the new factor as correct, then there might well be exceptional cases of pernicious anæmia, in which there is a deficiency, not only in the liver principle contained in anahæmin but also in the new hæmopoietic factor Such cases would either not respond to anahæmin or make a poor unsustained response, but would respond to the cruder preparations such as campolon.

Further work is necessary to elucidate this and numerous other related problems, the most important being the relation of tropical macrocytic anæmia to the animal condition A trial of treatment with anahæmin in cases of tropical macrocytic anæmia is now being made in India

The nature of this new factor is at present unknown but is being investigated The possibility of identifying it with the vitamin B_4 fraction of the vitamin B_2 complex is suggested by the facts that it is present in the more soluble fractions of yeast, marmite, liver, and wheat-germ extracts, and that it shows similar behaviour to heat, alcohol, and various chemical reagents It is also more nearly allied chemically to the hæmopoietic substance earlier isolated by Cohn, McMeekin, and Minot (1930) than to anahæmin or hæmopoietin

CONCLUSIONS AND SUMMARY

Two factors have been separated from the liver extract campolon one soluble and one insoluble in saturated ammonium sulphate.

Given parenterally, the soluble fraction is curative in the nutritional macrocytic anæmia of rhesus monkeys The insoluble fraction, which contains the anahæmin present in campolon, is inactive in the monkey anæmia—as are also the commercial preparations of anahæmin—but is curative in pernicious anæmia

Similar fractionation of the alcohol soluble fraction of acidulated aqueous yeast extract yields two fractions, of which (when given by mouth) the insoluble is inactive and the soluble active in the monkey anæmia This soluble fraction was inactive in the treatment of one monkey when given parenterally *

There is some evidence that both factors are necessary for hæmopoiesis in man and rhesus monkeys, but that in the production and cure of the nutritional anæmia of the monkey it is the soluble fraction that is mainly concerned Its action in tropical macrocytic anæmia is being investigated

The two factors must be present in those extracts of liver, yeast, and wheat germ that are active either alone or after mixture with gastric juice in both the monkey and pernicious anæmia

The possible relationship of the new factor to the vitamin B_2 complex and to the factor previously isolated by Cohn, McMeekin, and Minot is discussed

It is a pleasure to acknowledge the generous help of Miss Harriette Chick D Sc, and her colleagues at the Lister Institute, who gave us supplies of flavin and of certain yeast and wheat-germ extracts standardised in terms of the vitamin B_4 factor We are indebted also to Dr C C Ungley of Newcastle upon Tyne for testing the anahæmin used in the present work, and to Dr Dorothy Hare and Dr Jenner Hoskin of the Royal Free Hospital for permission to treat their cases The yeast from which the extracts were made was very kindly given us by Messrs Watney, Combe and Reid of the Stag Brewery, S W 1

A detailed report of this work will appear elsewhere

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TUBERCULOUS LESIONS IN ASSOCIATION WITH GENITO-URINARY TUBERCULOSIS

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It is recognised that urinary tuberculosis is secondary to a source of tuberculosis elsewhere in the body, that the prognosis depends greatly on the state of the preceding focus, and that sanatorium treatment after operation is of value in improving the prognosis (Joly 1935) It seemed to me that an investigation of the types of tuberculous lesion accompanying genito urinary tuberculosis and their effect on the disease would be of interest and would tend to confirm the hæmatogenous nature of genito urinary infections The following series was there

TABLE I —*Genito urinary and Genital Tuberculosis Classified According to Age and Sex*

Age	Genito urinary		Epid orch alone	Age	Genito urinary		Epid orch alone
	M	F			M	F	
1–10	2	1	—	41–50	4	3	1
11–20	3	1	2	51–60	2	1	—
21–30	8	2	—	Total	28	13	6
31–40	9	5	3				

M = male F = female Epid -orch = Epididymo orchitis fore investigated of unselected cases admitted to the Essex county council sanatorium during 1931–36 either from general hospitals or from tuberculosis dispensaries with the exception of 6 patients who developed genito urinary tuberculosis while under treatment at the sanatorium for bone or joint lesions The total number was 47 and they are set out according to their age and sex in Table I The number of cases with tuberculous lesions elsewhere was 29 or 62 per cent of the total. The incidence and nature of the lesions are set out in Table II

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* Since writing the above a monkey has responded to the parenteral administration of this soluble fraction from yeast

TABLE II —*Distribution of other Tuberculous Lesions in Genito urinary Tuberculosis* (46 *Cases*)

Site and type of lesion	No of cases	Site and type of lesion	No of cases
No other tuberculous lesion	13	Both pulmonary and skeletal tuberculosis	11
Primary lung lesions or calcified hilum glands	3	Pulmonary tuberculosis and lupus	1
Calcifications in the spleen	2	Pulmonary tuberculosis and tuberculous bursitis	1
Tuberculosis of lung or pleura	7	Skeletal tuberculosis and subcutaneous tuberculous abscesses	1
Skeletal tuberculosis	8		

In estimating the effect of these other lesions on the severity of the disease the time that has elapsed since discharge has generally been too short for opinion to be of value. The factors that have been used for this purpose therefore are the mortality rate of patients in each group of extraneous lesions, the present condition in each group of the patients who are still alive and the average duration of the disease of these patients These particulars are given in brief in Table III

TABLE III —*Present Condition*

Distribution of lesions	No of cases	Alive	Average duration (yrs.)	Present condition Satis	Present condition Not satis	Still under treatment	No recent information	T B in urine	No T B in urine	Dead
Genito urinary tuberculosis alone	18	16	6	10	5	1	0		11	2
With lung tuberculosis	7	5	2–3	3	1	1	0	2	3	2
With skeletal tuberculosis	8	7	1–5	1	3		1	6	1	1
With lung and skeletal tuberculosis	11	7	2–5	2		2	1	3	3	4
With lung and other tuberculous lesions	2	1	5	1	0	0	0	0	1	1
With skeletal and and other tuberculous lesions	1	1	3	1	0	0	0	0	1	0
Total	47	3	—	18	11	6	2	15	20	10

Present condition satis. = Health good and no marked symptoms

Present condition not satis = Health poor or marked symptoms present

WITHOUT TUBERCULOUS LESIONS ELSEWHERE

In the series 18 cases had no other discoverable tuberculous lesions than the genito-urinary except in 3 cases with evidence of primary infection and in 2 cases with calcified miliary foci in the spleen The presence of miliary splenic foci may be regarded as evidence that a bacillæmia had previously occurred Miliary tubercles may be observed by radiography to disappear from the lungs of children without leaving evidence in the form of calcifications and a bacillæmia may therefore have occurred also in other cases of this series without leaving any traces that could be detected radiographically In this group of 18 cases, however the resistance of the patient was good and the disease whatever its method of dissemination became fixed in one system genital or renal or even in one focus It thus became amenable to removal by excision. In examining this group of cases therefore it would be expected that operative treatment had been performed in the majority and that the results were good This is confirmed by the findings

Of the 18 cases 16 are alive after an average period of more than six years from the date of onset of symptoms 2 of these were of genital tuberculosis only treated by orchidectomy while the remaining 14 cases had renal tuberculosis 10 of which had been treated by nephrectomy Of the 2 patients who died 1 had been treated by nephrectomy 15 years previously the other was a child who had had no operative treatment

The health of the majority of the survivors at the present time is satisfactory

WITH TUBERCULOSIS OF THE LUNG OR PLEURA

Tuberculous pulmonary lesions were found in 20 cases of the 47 (42 5 per cent,) but as the earlier cases in the series did not have routine chest radiograms this figure is probably an under statement It may be compared with the figure quoted by Reisner (1934) who in a series of 69 cases of genito urinary tuberculosis in New York found pulmonary lesions in 44 (66 per cent) Reisner has made observations on the types of lung lesions occurring with extra pulmonary tuberculosis and has classified them into two main groups In the first and larger group the disease is bilateral is distributed in an apico-caudate direction is frequently non ulcerative and causes no abnormal physical signs The lesions of the second group are those characteristic of phthisis. In the first group in Reisner's opinion the disease is hæmatogenous in origin The finding in the present series tend to agree with Reisner's and are given in Table IV so far as is possible according to his classification The mortality with each type of lung lesion is also noted From this Table it will be seen that the apical lesions which are usually of a low degree of activity make little difference to the severity of the disease; that the fibrocaseous lesions of phthisis have not been of grave prognosis; and that the bilateral apico caudate lesions have proved the most dangerous The latter are usually an advanced stage of the bilateral apical lesions but an advance of the disease of this sort is not likely when once the apical lesions have become fibrotic The 2 cases of miliary tuberculosis mentioned in this series were ones in which the disease was discovered radiographically There is no doubt that there may have been other cases also in the series that died of miliary tuberculosis

TABLE IV —*Classification of the Tuberculous Lung Lesions*

Type of lesion	No of cases	Alive	Dead
Bilateral apical lesions, interstitial or fibrotic activity nil or slight	8		1
Unilateral apical scarring	1	1	0
Widespread bilateral apico-caudate lesions	3	0	3
Bilateral acute disseminated disease of miliary type		0	2
Fibrocaseous lesions of phthisis	3	2	1
Pleural effusions	3	2	1 (child)

A consideration of the effect of tuberculous lung lesions on renal disease in this series is complicated by the presence of additional tuberculous lesions in the skeleton or other tissues in 13 of the cases These additional lesions increase the gravity of the disease Thus 7 cases had tuberculous lesions in the lungs, of whom 5 are alive Of the 13 patients who had skeletal and other lesions in addition to lung lesions, 5 have died, the average duration of the disease of the 8 cases alive is only 2¼ years, but the fact that some of these are making favourable progress is an indication that with sanatorium treatment even cases with multiple lesions may occasionally do well, provided operation has been practicable It will be seen, however, that the resistance of the patients in this group with lung lesions is lower than in the previous group in which there were no tuberculous lesions outside the genito urinary tract It will be seen also that when there are multiple tuberculous lesions, the lung lesions tend to be of the more serious type

WITH TUBERCULOSIS OF THE SKELETAL SYSTEM

There were tuberculous lesions in the skeleton in 20 cases (42 5 per cent) In 8 the lesions were quiescent and in 12 active The quiescence or activity of the lesions, however, was found to be less important than their accompaniment by pulmonary lesions Thus 5 of the 8 cases with quiescent skeletal lesions are alive and 3 have died, and 10 of the patients who had active skeletal disease are alive and 2 have died On the other hand, when the groups of skeletal lesions are considered that occurred with and without pulmonary disease it is found that the presence of pulmonary disease is significant There were 9 cases with no pulmonary involvement of these 8 are alive and 1 has died, there were 11 cases of skeletal disease with pulmonary involvement, of whom 7 are alive and 4 have died

In every case the skeletal lesion preceded the lesion in the genito urinary tract, but it is not possible to ascertain whether the latter was the result of invasion of tubercle bacilli from the skeletal lesion into the blood stream, or whether there had been an infection from another source The situations of the skeletal lesions were as follows in 8 cases the lesions were in the spine, in 5 in the hip, in 2 in the sacro iliac joint, and in single cases in the shoulder, sternum, knee, rib, and wrist Several patients had multiple skeletal lesions The variety of the sites of skeletal disease and the incidence of genito urinary lesions in this group indicate that these lesions were of hæmatogenous origin

URINARY TUBERCULOSIS WITH TUBERCULOSIS OF THE LYMPHATIC SYSTEM

In childhood the lymphatic system forms a barrier to invasions of the blood stream by tubercle bacilli genito urinary tuberculosis is therefore fortunately uncommon among children It becomes more common in later life, when the lymphatic tissues of the body begin to atrophy It is therefore not surprising in this series to find very little evidence of tuberculous involvement of the lymphatics In 3 of the children there was evidence of primary infection with calcified hilum glands In 3 cases also calcified tuberculous glands were present in the abdomen and in 1 case there were healed cervical glands In no patient was active glandular tuberculosis present

TUBERCULOUS EPIDIDYMO ORCHITIS WITH LESIONS OUTSIDE THE GENITAL OR URINARY TRACTS

In this series of cases it is worth noting that genital tuberculous lesions, occurring without renal tuberculosis, were associated with hæmatogenous tuberculous lesions outside the genital or urinary tracts In 20 cases of epididymo orchitis the relationship with renal disease was as follows —

(1) Cases in which no renal disease has developed	6
(2) Cases in which epididymo orchitis preceded renal disease	8
(3) Cases in which epididymo-orchitis followed renal disease	3
(4) Case in which the onset of epididymo orchitis and renal disease was concomitant	1
(5) Cases in which the history of precedence was doubtful	2

In 15 cases, therefore, detectable renal disease did not precede epididymo orchitis, and infection of the epididymis could not have occurred by lymphatic spread from the kidney Of these 15 cases 11 were preceded or accompanied by lesions of hæmatogenous origin outside the genital or renal tracts From this it may be inferred that genital tuberculosis, like renal tuberculosis, is part of a hæmatogenous infection and is not a primary manifestation of tuberculous disease The incidence of genital with renal tuberculosis does not seem to have increased the severity of the disease in this series

I wish to express my gratitude to Dr W A Bullough, medical officer of health to the Essex County Council and to Mr R Reid consulting surgeon to the sanatorium, for the assistance they have given me with this article, and to the tuberculosis officers of the Essex County Council for the records that they have provided of the present condition of the cases in the series

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GENITO-URINARY TUBERCULOSIS

WITH A REVIEW OF 100 CASES

By Frank Harvey, F R C S Edin
CONSULTING SURGEON TO ST ANTHONY'S HOSPITAL, CHEAM TO ST MICHAEL'S HOSPITAL HAYLE AND TO BROADMOOR CRIMINAL LUNATIC ASYLUM

The term genito urinary tuberculosis comprises tuberculous disease of the kidneys, ureters, bladder, prostate, vesicles, testes, and epididymes in the male, and of the uterus, ovaries, Fallopian tubes, vagina, and vulva in the female The condition is never primary, but is secondary to a tuberculous lesion elsewhere, which may be apparently quiescent This lesion is either primary (e g, in the lungs) or secondary (e g, in bones) Harris (1928–29) found that of 110 cases of tuberculosis of bones a quarter had tubercle bacilli in the urine And Medlar (1928) states that tuberculous bacilluria never occurs without demonstrable lesions in the kidneys, though these are often only microscopic in size Secondary infection by pyogenic organisms is common, and tuberculosis often supervenes on chronic pyogenic infections

The genito urinary disease may be part of a generalised miliary tuberculosis (tuberculous septicæmia) or (as in the 100 cases on which this paper is based) it may be localised to one or more organs

Local Pathology

Kidney —Renal tuberculosis is generally unilateral, later involving the ureter and bladder, but the second kidney may become infected through the blood stream through the peri ureteral lymphatics or by reflux of urine from the bladder Grey tubercles form usually in the apex of the pyramids but sometimes around the glomeruli in the cortex and they gradually coalesce to form a caseous mass which either calcifies or breaks down to form an abscess. In either case the result may be involvement of the whole kidney or a localised calcified mass or an abscess Where the kidney is converted into a large tuberculous abscess the perinephric fat is usually infected More rarely the kidney becomes fibrosed and contracted

Ureter—In serious cases the ureter is converted into a rigid tube with thick walls the mucous coat being destroyed over large areas

The *bladder* is always infected either from the kidneys, from the prostate and vesicles or (in the female) from the urethra In the early stages of infection from the kidney there may be only a few grey tubercles situated around one or both ureteric orifices with some associated œdema and redness later there is ulceration and the ureteric orifice becomes rigid (golf hole type) When the bladder is infected from the prostate and vesicles or from the urethra the trigone is first affected In tuberculous disease of the bladder the mucous membrane soon becomes acutely inflamed cystoscopy is difficult and the bladder capacity is greatly reduced The ulcers are characteristic being small and round with undermined edges and tend to become confluent the base is sloughy Secondary pyogenic infection is common

In my own series tuberculosis has rarely spread *from bladder to genital organs*, but often in the male in the opposite direction

MALE ORGANS

Epididymis—The tuberculous infection begins in either globus major or minor It is usually unilateral and due to spread from the prostate but it can be hæmatogenous The epididymis may become converted into a caseous mass or the disease may be limited to a nodule which becomes calcified At first there is an associated hydrocele—more rarely a hæmatocele Suppuration is common with involvement of the testes and scrotum leading to sinus formation with secondary infection

The *testis* is involved by spread from the epididymis.

The *vas deferens* is infected either from the prostate and vesicles or from the epididymis It may become enormously thickened

Tuberculosis in the *prostate* comes from the epididymis (via the vas deferens), from the blood stream or more rarely from the bladder as a result of severe ulceration involving the internal urinary meatus The lesion is usually caseous but occasionally it is sclerotic producing contraction of the prostatic urethra with retention of urine In favourable cases calcification occurs Abscess formation is not uncommon; the pus may track alongside the rectum into the perineum producing an ischiorectal abscess or may perforate the bowel and cause a urinary fistula More often it bursts into the bladder

Seminal vesicles—Vesiculitis is due to spread from the epididymis or prostate and the outline of the vesicles can be seen on cystoscopy

FEMALE ORGANS

Norris (1933) states that tubercle bacilli may infect the female genitalia (1) through the blood stream—the commonest route (2) by direct extension from a neighbouring focus such as the peritoneum or intestinal or urinary tracts (3) from a nearby focus via the lymphatics or rarely (4) by direct infection as by tubercle bacilli in the semen with slight trauma or by infected instruments

In the *external genitalia* the disease may be either ulcerative or hypertrophic the former being the commoner The hypertrophic often becomes ulcerative and tubercle bacilli are more easily found in the ulcerative type

Vulva—Vestibular tuberculosis is usually of the small multiple ulcer variety but a papilliferous or hypertrophic condition is also seen

Bartholin s glands are infected occasionally without any other lesion of the vulva

In the *vagina* tuberculosis is rare the usual form consists of small multiple ulcers and it is usually due to spread from the uterus

The *cervix* is also rarely affected. There may be a shallow indolent ulcer with thin undermined edges and irregular base or the condition may resemble carcinoma (hypertrophic form).

Uterus—The body of the uterus is fairly often the site of tuberculous disease manifested either as endometritis or perimetritis, the first being the commoner There is often a pre-existing tuberculous salpingitis, and the endometrium is involved around the tubal openings The miliary type is more often met than the ulcerative or the caseous

Fallopian tubes—Chronic inflammation due to puerperal sepsis or gonorrhœa is an important predisposing factor In more than three quarters of Norris s cases the primary lesion was pulmonary

The *ovaries* are resistant to tuberculous disease *and when present it has usually spread from the tubes* or from the peritoneum The natural process of arrest is by fibrosis and calcification

Diagnosis

Of the 100 cases under review which came from London the Home Counties, and Cornwall 7 had a history of pleurisy and 1 of tuberculous enteritis Otherwise *no tuberculous history was given In only* 17 could any clinical or radiological evidence of extragenital tuberculosis be discovered the distribution being as follows; lungs 4; glands of neck 3 spine 2 sacro iliac joints 1 hip 4 carpus 1 tarsus 1 peritoneum 1

In *renal disease* dysuria was the first symptom in 37 of the 40 cases in the other 12 it was symptomless hæmaturia Cystoscopy was not done on patients who had to pass urine more than once an hour nor in cases with strangury The diagnosis was established by finding tubercle bacilli either by ureteric catheterisation or by sedimentation of a 24 hours specimen of urine with inoculation of a guinea pig if necessary Of 20 cases investigated pathologically however 14 (70 per cent) showed no tubercle bacilli at all the organisms in the other 6 being all of human as opposed *to bovine type*

Pyelography intravenous and ascending showed deficient filling of the pelvis and calyces the latter being clubbed ; while intravenous pyelography had the additional advantage that the rate of excretion of the dye gave an idea of the severity of the lesion

Male genital tuberculosis—The commonest first indication of epididymitis is a painless enlargement More rarely an acute form is seen with pain and an associated hydrocele The nodular feel of the epididymis and the fact that testicular sensation is retained help to differentiate tuberculosis from syphilis In the acute variety aspiration of the hydrocele permits of more accurate palpation Also, rectal examination will often reveal nodules in the prostate

In tuberculous *prostatitis there may be no symptoms* other than occasional dysuria, with slight discharge, which "gums" the external urinary meatus Examination of the urine reveals shreds and pus, and tubercle bacilli On the other hand a perineal abscess is occasionally the first symptom, or, more rarely, hæmaturia In tuberculous epididymitis, rectal examination more often than not reveals prostatic nodules

Female genital tuberculosis may be very difficult to diagnose Vulvitis, infection of Bartholin's gland, and cervicitis cannot be reckoned tuberculous unless tubercle bacilli are found, tuberculous disease of the cervix may simulate carcinoma, while tuberculous vulvitis may simulate syphilis The discharge from a tuberculous endometritis is usually less offensive and hæmorrhagic than that of malignant disease, but the presence of tubercle bacilli in the endometrium is the only sure method of diagnosis, and it necessitates curettage Tuberculous disease of the Fallopian tubes may be suspected if the patient is suffering from tuberculous disease elsewhere, but otherwise it can only be made at operation

The 100 Cases

Of the 100 cases here described all but 8 were seen and treated at St Michael's Hospital, Hayle, Cornwall Some had already been operated on, some were sent for observation and treatment, while some were sent because they were inoperable but improved to such an extent that operation became feasible The youngest was 14 years of age (female) and the oldest 60 (male), the average being 25½ years There were 52 males and 48 femals The history sheets which came with most of the patients contained a note of the home conditions which were described as good in 24 cases, fair in 25, and bad in 51 These unsatisfactory conditions made it difficult to secure even moderately suitable after care

The *condition on admission* may be briefly summarised as follows —

Febrile	4	General condition—	
Sinuses	17	Fair	64
Operation scars	24	Bad	36

In considering the results the following classification was adopted —

Arrested or "cured" means that there were no signs or symptoms and the urine was clear

Relieved means that weight had increased signs and symptoms were less pronounced, there was no fever or pain, and the urine contained no more than a trace of pus

The following Table shows the position at the end of the five years It will be noted that there were 9 deaths amongst the renal cases, in the 4 cases not operated on the condition was bilateral The cause of death was uræmia in 3 cases and generalised tuberculosis in the remaining 6 Of the 6 males with genital tuberculosis who died 4 developed bilateral renal disease with gross cystitis and uræmia, the other 2 died of pulmonary tuberculosis None of the 4 patients with tuberculosis of the prostate developed epididymitis, but 1 had severe cystitis, and was worse when last examined than on admission

Treatment

Genito urinary tuberculosis is treated on the same principles as tuberculosis elsewhere Good hygiene, a generous diet (unless there is fever), fresh air and sunlight, and a cheerful environment are necessary Febrile patients are kept in bed, and so are those with extensive sinuses, for a sinus will never heal if the part affected is not kept at rest Afebrile patients are allowed moderate exercise In renal tuberculosis plenty of liquids (e g, barley water, Imperial drink, water, tea, and milk) are given, for they alleviate dysuria Extra milk has been found very helpful

Results after Five Years or More

—	Arrested or 'cured'		Relieved		Worse		Deaths		Untraced.		Totals
	Op	Non op	Op	Non op	Op	Non op	Op	Non op	Op	Non op	
Renal	15	2	4	2	2	4	5	4	5	6	49
Testes and epididymis	13	3	5	2	2	5	3	3	5	3	44
Prostate	0	1	0	2	0	1	0	0	0	0	4
Uterus*	0	0	0	1	0	0	0	0	0	0	1
Fallopian tubes (bilateral)	1	0	0	0	0	0	0	0	0	0	1
Vulva†	1	0	0	0	0	0	0	0	0	0	1
Total	30	6	9	7	4	10	8	7	10	9	100

* Tuberculous endometritis treated by X ray therapy
† Infection of Bartholin's gland Primary infection pulmonary

The immediate reaction to treatment was in most cases remarkably good, the patients put on weight with a feeling of improved health, but symptoms such as dysuria were not so quickly relieved

Heliotherapy, if it is to expedite recovery, has to be carefully graduated Too reckless exposure to the sun's rays generally produces ill results—blistering, pyrexia, and a mild degree of sunstroke

The results from tuberculin treatment (T R) have been disappointing Ten cases were given tuberculin for six months, and at the same time a similar number, apparently in the same stage of the disease were treated without it The cases treated with tuberculin did not progress so favourably as those without, they often became pyrexial with increase of symptoms

Dysuria is difficult to relieve in severe cases of renal tuberculosis, and may demand irrigation of the bladder with boric lotion, or instillation of a solution of silver nitrate (1 in 10,000) or of flavine in glycerin (1 in 1000) Iodoform emulsion has proved beneficial in ulcerative cystitis and diathermy has helped to clear up chronic ulceration Sandal-wood oil capsules are often effective, and a mixture of potassium citrate, tincture of hyoscyamus, and belladonna gives relief Where a nephrectomy has been performed, the continuance of dysuria is usually due to disease of the lower end of the ureter on the affected side, and ureterectomy sometimes becomes necessary Dysuria due to tuberculous prostatitis is the most intractable form, and in severe cases the patient becomes incontinent, with an œdematous external urinary meatus In uncircumcised patients the prepuce becomes chronically inflamed, with multiple fissures The application of medicinal paraffin to the prepuce affords some relief

For *operative treatment* to be successful in renal cases, early diagnosis is essential In three cases intravenous urography showed that the disease was chiefly localised to one kidney and nephrectomy was performed with success The removal of a calcified kidney is not in my opinion warranted unless there are definite indications that an abscess is forming This applies, I think to all dead tubercle since operative treatment is liable to light up the disease and produce a generalised tuberculosis

Orchidectomy was performed in cases where there were sinuses and the testes and epididymis had been converted into abscess cavities. Epididymectomy has not been used and of the two patients on whom this operation was performed before admission to St Michael s Hospital one has died from pulmonary tuberculosis and the other cannot be traced and is presumably dead

In cases of tuberculosis of the prostate no operation other than the opening of abscesses pointing in the perineum has been attempted One patient is still under treatment who has had three perineal abscesses incised and drained On admission he was suffering from a rectovesical fistula complicated by a left ischiorectal abscess and left epididymitis with abscess formation which necessitated orchidectomy

Summary and Conclusions

Of 100 cases of genito urinary tuberculosis reviewed after five years 15 are dead and 19 untraced If the latter are presumed to be dead the total death rate is 34 per cent What is known as sanatorium treatment is essential for this disease and at least 12 months treatment is required with suitable after care Operation on dead or quiescent tuberculous foci is inadvisable

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THE EFFECT OF AN ANTI-VI BACTERIOPHAGE ON TYPHOID INFECTION IN MICE

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Many attempts have been made to study the influence of different strains of bacteriophage on experimental infections in laboratory animals Two of us (W W C T and J W) have previously recorded studies on the effect of phages active against *Bact typhi murium* (*Bact aertrycke*) in experimental mouse typhoid both as it occurs in individual mice and in the form of experimental epidemics These studies and the results published by many other workers have recently been summarised in a report issued by the Medical Research Council (Greenwood et al 1936) and there is no need to review the literature here It will be sufficient to note that no satisfactory evidence has yet been obtained that a phage exerts any significant effect on the course of an experimental infection In the report in question the present position was summed up as follows

Although all the present indications are definitely against the efficacy of this agent in vivo except perhaps in cholera and although the argument of inadequate virulence or insufficient polyvalency of the phage employed cannot be accepted a a satisfactory explanation of an unlimited number of negative results we do not think that this field has yet been explored to the point at which further search becomes useless It is at least far more likely that clear and definite answers favourable or unfavourable will be obtained by controlled animal experiment than by any relatively uncontrolled trial in the field The present paper deals with certain experiments that we have recently carried out along these lines

Our earlier trials formed an extension of our previous studies on the action of various phages in mouse typhoid. Certain of these results were more promising than any that we had formerly obtained but they were irregular and not always repeatable and it was clear that many different factors were involved. It was far easier to induce delay in the time to death than to protect mice against a fatal attack of this particular infection It seemed desirable to test the effect of a phage on an infection of a type that in normal animals leads either to rapid death or to recovery and the isolation by Sertić and Boulgakov (1936) and more recently by other workers of a phage active against Vi strains of *Bact typhosum* offered an opportunity of carrying out experiments on an infection of this type

Experimental

The strain of phage used in these experiments was supplied to us by Drs Sertić and Boulgakov and the Vi strain of *Bact typhosum* was the Rejuvenated Rawlings strain for which we are indebted to Major General Marrian Perry of the Royal Army Medical College To each we should wish to express our thanks

In the first experiment mice in batches of 30 were injected intraperitoneally with a mixture containing 1 5 × 10^9 phage particles and 100 10^6 *Bact typhosum* in 0 5 c cm of Ringer s solution The mixtures were allowed to stand at room temperature for approximately ten minutes before inoculation The phages tested in this experiment were the pure anti Vi phage supplied by Dr Sertić (S/Vi) another pure phage supplied by Dr Sertić that was active against both the O and the Vi forms of *Bact typhosum* (S/O Vi), a crude mixed phage isolated by one of us (I N A) *from sewage* containing an anti Vi phage (A/Vi crude) and a mixture of the pure phages S/Vi and S/O Vi As controls 30 mice were injected with a mixture of heat killed S Vi phage and *Bact typhosum* and two batches of 30 mice were injected with *Bact typhosum* alone All mice were observed for 7 days It may be noted that the pure S/Vi phage and the crude A/Vi phage produced more rapid lysis in vitro with less secondary growth, than the non-specific S/O Vi phage

The results are set out in Table I It is clear that under these conditions the living anti Vi phage is a very effective protective agent while the non specific phage has no protective effect The heat killed anti Vi phage has no significant action All further experiments were carried out with the S Vi phage

It is obvious that the conditions of this experiment which has been repeated with the same results are particularly favourable to the phage since it had an opportunity of uniting with the bacteria in vitro before the mixtures were injected into mice In order to determine whether a similar protective effect would be exerted when the phage encountered the bacteria in the tissues we injected the phage intravenously and the living bacteria intraperitoneally the second series of injection 1 2 performed about 45 minutes after the first The doses of phage and bacteria were the same in this experiment as in the preceding A control group received an intravenous injection of heat-killed phage before the intraperitoneal injection of living typhoid bacilli, and a second control group received no phage

TABLE I

Showing the effect of an anti Vi and other phages on the intraperitoneal infection of mice with a Vi strain of Bact typhosum *Phage (1 5 × 10^9 particles) and bacteria (1 × 10^9) being mixed before injection*

Phage	No of mice tested	No of mice dying
S/Vi	30	0
A/Vi crude	30	2
S/O Vi	30	25
S/Vi + S/O Vi	30	1
S/Vi (heated)	30	24
None (control)	30	22
None (control)	30	23

The results are set out in Table II It is clear that the anti-Vi phage is able to exert its protective action when it meets the bacteria in the tissues

The next step was clearly to determine whether the phage had any curative action—i e , whether it would exert a protective effect when administered *after* the injection of living typhoid bacilli In this experiment the bacilli were injected intraperitoneally into five groups, each of 30 mice The first group received an intravenous injection of living phage immediately after the intraperitoneal injection of bacilli The second group were injected with phage after 2 hours, the third group after 4 hours A fourth group received an intravenous injection of heat killed phage immediately after the intraperitoneal injection of bacilli A fifth group received no further treatment These last two groups served as controls

TABLE II

Showing the effect of the intravenous injection of an anti Vi phage immediately before the intraperitoneal injection of a Vi strain of Bact typhosum

Phage injected	No of mice tested	No of mice dying
S/Vi	30	3
S/Vi (heated)	30	25
None (control)	30	26

TABLE III

Showing the effect of administering anti Vi phage intravenously at varying periods after the intraperitoneal injection of a Vi strain of Bact typhosum

Phage injected	Time after injection of bacilli	No of mice tested	No of mice dying
S/Vi	At once	30	3
S/Vi	2 hours	30	11
S/Vi	4 hours	30	23
S/Vi (heated)	At once	30	27
None (control)	—	30	30

In this experiment the dose of phage was the same as before but the dose of typhoid bacilli was increased to 250 × 10^6

The results are set out in Table III The anti-Vi phage has as great a protective action when injected intravenously immediately *after* the intraperitoneal injection of living typhoid bacilli as when injected immediately *before* (Table II) If the intravenous injection of phage is delayed for 2 hours after the injection of bacilli there is still a significant protective effect , but it is considerably reduced If the injection of phage is delayed for 4 hours its protective action becomes insignificant In this connexion it must be remembered that the course of this infection in mice is extremely acute In this experiment, 23 and 27 of the 30 mice in the two control groups were dead within 24 hours

Discussion

Typhoid infection in the mouse is a highly artificial disease The lethal dose of bacilli, even with a virulent Vi strain, is relatively large, and toxæmic effects are marked at an early stage of a fatal infection We should not therefore be inclined to argue too readily from the results of these experiments to infections of a more typically invasive type

We think, however, that one problem has been decisively answered A phage may be active in vivo as well as in vitro , and, under suitable conditions, a phage that has a specific action on the surface antigen of a virulent bacterium is capable of exerting a significant protective action when it meets that bacterium in the tissues

In view of these findings it is clearly desirable to examine very carefully the possibility that a similar protective action may be exerted in acute or sub acute infection of the typically invasive type, if the conditions are correctly adjusted

Two of us (I N A and J W) are receiving research grants from the Medical Research Council who are also contributing to the expenses of this investigation

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ŒSTRADIOL BENZOATE THERAPY IN DEPRESSIONS AT THE MENOPAUSE

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THERE is at present a reactionary tendency to minimise the importance of the climacteric in the production of psychotic or neurotic breakdowns It is possible that the pendulum has swung too far and that research into female sex physiology by modern methods might shed light on these disorders We accordingly decided to investigate and treat a series of patients along endocrinological lines

Seventeen cases were chosen in which the onset of the depressive illness coincided with the onset of the menopause, as judged by the history given As the endocrine imbalance at the menopause is associated with abeyance of ovarian function, substitution therapy with œstradiol benzoate was instituted Unfortunately it was necessary to include in our series several patients who had been in hospital for some years before the therapy was started , and the same shortage of clinical material made it impossible to use similar cases as controls The psychiatric picture varied naturally with each individual case but all showed definite depression without retardation agitation partial or complete loss of interest in their surroundings, and insomnia, while in most of them suicidal ideas were expressed A careful physical examination was made in all.

Before treatment with œstradiol benzoate a 24-hour specimen of urine was examined quantitatively for œstrin and gonadotropic hormone In the few cases where the patient was still menstruating an attempt was made to obtain the urine immediately before the onset of menstruation A glucose tolerance curve was also done. Each patient was then given injections of 5 mg œstradiol benzoate twice weekly unless she was menstruating The total amounts given varied from 60 to 140 mg On the cessation of treatment the glucose-tolerance test and the quantitative estimation of gonadotropic hormone were repeated

RESULTS OF TREATMENT

Of the 17 patients treated 6 made a satisfactory recovery as judged by their ability to return to their former occupation and these have all remained well for at least three months (Table I) It is interesting to note that the average stay in hospital of these 6 patients after treatment began was three months the extremes being two and five month whereas an illness of this kind usually lasts at least nine months Of the remaining 11 patients 5 are still in hospital and 6 have been discharged though still far from well. These cases were in most instances less satisfactory therapeutic propositions than those that were successfully treated in 2 of them the diagnosis was in doubt and later development suggested that they belonged to the paranoid rather than the depressive group while in several of the others the patients had been in hospital as long as four years before œstradiol benzoate therapy was attempted

TABLE I

Duration of Illness and Result of Treatment

Case.	Age.	Duration of psychosis before treatment (months)	Time since last menstrual period (months)	Result
1	52	12	M	Good
2	37	6	M	
3	44	24	24	Unsatisfactory
4	47	4	15	
5	62	15	3	
6	40	48	M	
7	46	6	M	Good
8	49	13	M	Unsatisfactory
9	41	48	7	
10	48	12	M	
11	50	6	30	
12	48	12	1	
13	53	24	24	
14	38	3	3	
15	50	10	3	Good
16	41	18	30	
17	45	30	3	

M = still menstruating

Œstrin in measurable quantities was present in the urine in 4 of the 13 cases tested but only in very small amounts In 2 of these cases gonadotropic hormone quantitatively amounted to more than 50 mouse units (M U) per litre of urine and in the other 2 it was less than 50 M U (Table II) These 4 patients were all menstruating Two others whose urine contained no measurable quantity of œstrin were also menstruating These 6 cases in which menstruation was still going on all showed flushings and other indications of *œstrin insufficiency*

Of the 13 cases in which gonadotropic estimations were done before and after treatment 11 gave at the start a gonadotropic finding of more than 50 M U per litre, and this was altered after treatment to less than 50 M U In the remaining 2 cases the results before and after treatment were both less than 50 M.U In 8 cases the glucose tolerance curve after treatment was substantially lower than before treatment This inhibition *was found in all the cases in which* the patient recovered In all cases somatic symptoms such as flushings and backache which were present before treatment were abolished by œstradiol benzoate

TABLE II

Hormones in Urine Before and After Treatment and Dose of Œstradiol Benzoate (Dimenformon) Given

Case	Œstrin in urine before treatment (M U per 24 hours)	Gonadotropic hormone		Total œstradiol benzoate (mg)
		Before treatment	After treatment	
1	0–10	+	–	120
2	10–20	–	–	80
3	Less than 10	+	–	70
4	10	+	–	60
5	10	+	–	65
6	10	+	–	75
7	10–20	–	–	100
8	Less than 10	+	–	90
9	„ 10	+	–	65
10	10–20	+	–	60
11	Less than 6	+	–	90
12	Not done	Not done	–	140
13			–	140
14		„	–	130
15	„		Not done	0
16	*Less than 10*	+	–	100
17		+	–	75

Gonadotropic hormone + = more than 50 M U per litre of urine
– = less

DISCUSSION

Frank and Salmon (1935) demonstrated that complete inhibition of the gonadotropic hormone of the anterior pituitary could be produced in menopausal women by administering œstrin. The inhibitory effect was not permanent and gonadotropic hormone was again found in the urine in measurable quantities 28–70 days after the cessation of œstrin injections. In our series the excretion of gonadotropic hormone was inhibited in all cases in which there was an initial excess of hormone The lowering of the sugar tolerance curve which was noted in our cases as in those of McCowan and Quastel (1931a and b) was probably due to the improvement in the emotional and physical state

The results we have obtained substantially agree with those of Werner and others (1934 1936) and of Bowman and Bender (1932) both of whom regard œstrin as having a definite effect in accelerating recovery in uncomplicated cases of involutional melancholia Jones and MacGregor (1936) have shown that excessive excretion of gonadotropic hormone may be found many years after the menopause and that its inhibition with œstrin therapy does not affect the clinical picture Possibly however the hormonal disturbances of the menopause can sometimes be readjusted temporarily by œstradiol benzoate therapy and thus tide the patients over the crucial period The division between the post menopausal syndrome (hot flushes irritability &c) and complete mental breakdown is not well defined and for the relief of the minor symptoms œstrin is usually effective

SUMMARY

1 Seventeen cases of depression occurring at the menopause were treated with twice weekly injections of 5 mg œstradiol benzoate The total amount given varied from 60 to 140 mg

2 Six of the patients made a good recovery within five months and have resumed their normal lives The somatic symptoms were relieved in all the patients who had them

3 In eleven cases showing excessive amounts of gonadotropic hormone in the urine œstradiol benzoate reduced the amount excreted.

We are indebted to Prof D K Henderson, physician superintendent of the Royal Hospital for Nervous and Mental Disorders, for clinical facilities, and to Prof F A E Crew for the opportunity of performing the hormone tests in his department We also wish to thank the Organon Laboratories for a generous supply of œstradiol benzoate (Dimenformon)

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CLINICAL AND LABORATORY NOTES

CONGENITAL SYPHILIS IN A MONOVULAR TWIN

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TWINS who are unequally affected by congenital syphilis have been recorded by Haslund (1924) and Dennie (1924) In all but one instance the twin pair has been considered binovular, cases have also been reported in which monovular twins are equally affected These observations lend support to the view that differences in hereditary constitution may determine susceptibility to the congenital infection Against this view we have the evidence of Dennie's case of twins, judged to be monovular, one of whom had marked signs of congenital syphilis and the other had no such signs Unfortunately the diagnosis that the twins were monovular was not supported by an specific tests

The present communication records another pair of twins who appear to be monovular and unequally affected

Two female children, K A and V A were born on July 31st 1922 The father, then aged 33, was a casual labourer, usually out of work, who had been sent to prison for ill treating a dog and neglecting his children His mental grade was such that he could probably have been certified feeble minded He died in 1933 with cancer of the throat The mother was aged 30 in 1922, she is of low mentality, was sent to prison with her husband for neglecting the children, and is generally known to be an immoral character Physically she is a poor specimen There were four pregnancies An illegitimate male was stillborn in 1920 The twins were born in 1922 A boy, born in 1924, is an imbecile whose Stanford Binet score, at the age of 10 years 2 months, was 4 years 4 months He shows no signs of syphilis, and a Wassermann test was negative A girl, born in 1925, tested at the age of 8 years 4 months had a Stanford Binet score of 6 years and can be regarded as almost feeble minded She is physically healthy

K A, aged 12 years 8 months is physically a poor specimen with a sallow complexion round shoulders, and flat feet She talks clearly and sensibly, can play whist, and likes skipping, her Binet mental age is 6 years 4 months and she is certified feeble minded The blood Wassermann reaction is negative

V A was aged 11 years 11 months when she came under observation after having been certified an idiot Her Binet mental age was found to be 2 years 4 months Her speech was very defective hearing good She had conspicuous signs of congenital syphilis the incisor teeth showed irregularity of the cutting edges the nose was depressed, and she had scars around the mouth Unfortunately she was suffering from acute tonsillitis and eczema, and died a few days later A report, from the hospital where she was treated when aged 2 years, gives the following information "Diagnosis congenital syphilis Has been a weakling since 5 weeks old She has a twin, other child healthy Has been wasting considerably Wassermann reaction positive This child had a congenital fistula from the perineum to the rectum just behind the vagina Antisyphilitic treatment given and patient discharged still having treatment Result relieved'

In order to decide whether the twins were monovular, certain physical characters must be compared

—	K A	V A
Height	5 ft 1 in	4 ft 7 in
Weight	6 st 1 lb	5 st 1 lb
Head length	180 mm	179 mm
Head breadth	140 mm	136 mm
Hair whorl	Clockwise right side	Clockwise right side
Eye colour	Iris has brown inner ring and peripheral white spots	Iris has brown inner ring and peripheral white spots
Blood group	A	A
Hair colour	Very light brown	Very light brown
Ability to taste phenylthiourea (0 005% solution)	Present	Present

Comparison of the fingerprints, right hand with right hand and left hand with left hand, shows eight correspondences of pattern, according to Stocks (1933) less than 1 per cent of ordinary sibs have six correspondences and none have seven

In view of these tests and a certain general similarity of appearance it is probable that these twins are monovular and of the same genetic constitution One can only explain the difference in syphilitic infection by assuming that environmental conditions in utero were more favourable to one twin than to the other The physical inferiority of the syphilitic twin is shown by her smaller size and her mental inferiority is marked even though the healthy sister is feeble minded Since the parents are of low mental grade, syphilis can only be reckoned as a part cause of mental defect in the affected twin, but it may have reduced the grade from feeble mindedness to idiocy

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MICROGNATHIA IN THE NEW-BORN

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MICROGNATHIA, once we recognise it, is an obvious deformity because the lower jaw is so small, but the condition is not always diagnosed. Its effects may be severe and babies suffering from it have great difficulty in respiration with attacks of blueness of mechanical origin due to the tongue falling back and obstructing the throat; the infant thus appears to swallow the tongue. The condition has been called glossoptosis and indeed one's first impulse is to tie the tongue forward, but this, though it may give immediate relief, is practically certain to result in broncho pneumonia.

CASE HISTORY

The *following* case under observation at St. Mary's Hospital, Manchester, is a good example of micrognathia:

A full time male baby aged 2 weeks, normal delivery, birth weight 6¾ lb., was admitted because he was unable to suck for mechanical reasons, though there was plenty of breast milk available. He had had frequent attacks of cyanosis with difficulty in breathing and was dusky between the attacks. The bowels were regular and the stools normal.

Micrognathia in an infant aged [illegible] weeks

Family history.—He was the twelfth child, five having died, the two before him at 10 and 9 weeks because the lungs never expanded. The parents are normal, the mother aged 40. The other six children are normal. There is no suggestion of an hereditary deformity, but there might be a common factor in pregnancies.

On admission he was fairly well nourished with a rather dusky skin. The mouth was hanging open as shown in the Figure. The lower jaw was decidedly small in relation to the rest of the face and thus the chin receded. There was no cleft palate. No abnormal sounds were found in the heart, the lungs, or the abdomen. A radiogram of the chest showed fair aeration of the lungs and some dark areas at the roots.

Treatment.—The baby had to be fed artificially, but even with a feeder it was difficult. He vomited several times each day and there were frequent attacks of cyanosis which were relieved by propping him up and administering oxygen. It was found that posture had a good deal of effect on feeding and that the nearer the child was to being on his face the easier he was to feed. A splint was made for him as suggested by Eley and Farber (1930). It was unsuccessful and in fact increased the distress, appearing to hold the jaw forward, and it was not easy to keep in place.

Progress.—After improving a little the infant became worse and died; the post mortem showed a hypertrophied and dilated heart, especially on the right side. There was a suggestion of a slightly patent ductus arteriosus. The lower jaw was small in proportion to the upper. There was no evidence of any continuous pharyngeal obstruction.

CAUSATION

In this anomaly the smallness of the lower jaw shows as a receding chin (see Figure). Possibly the horizontal part of the jaw is more affected than the ascending branch. The angle between the mandibular body and the ascending branch is decreased, but alters later on as the milk teeth are accommodated. Eley and Farber state that this anomaly of the jaw, like other anomalies of the jaw and ear, is associated with the first branchial arch and cleft, and the deformity is probably due to imperfect development or irregular rearrangement of the tissues composing these transitory structures. Keibel and Mall (1910) hold that there may be some inhibitory process. This seems reasonable and most authors agree that the anomaly is a simple arrest of development of the jaw (e.g. Lenstrup 1925).

Davis and Dunn (1933) say: "The lower jaw being formed and united in advance of the upper acts as a matrix on which the upper jaw is formed. Considering the position of the child in utero, where the weight of the entire fetal body may be readily thrown on the vertex, it is easy to conceive how pressure of the sternal region in contact with the mandible might force the forming jaws together. If this undue force occurred at a time when the lower jaw was united and the upper jaw ununited, it is easy to understand how pressure on the chin could *force the partly calcified lower jaw backward*, straighten the obtuse angle to almost a right angle and prevent the union of the horizontal plates, causing a cleft in the soft tissues of the palate without involvement of the alveolar ridge or lip. It would also account for the backward displacement and small size of the tongue."

According to Keibel and Mall—

> the mandible reaches its characteristic shape by the middle of the third month of fetal life. At this time the lips project about equally. Later the upper lip of the embryo grows more rapidly so that in the fourth and fifth months it projects markedly beyond the lower lip. Normally, by a greater growth of the lower jaw and lip, this difference is overcome. If, however, some inhibitory factor such as that mentioned occurred, the early fetal arrangement might be retained and deformity result."

This explanation seems the more reasonable in view of the fact that the jaw develops under treatment (Eley and Farber 1930).

The possibility of an hereditary element must not be forgotten and Pfaff (1913) showed the deformity to be hereditary in 50 instances and in some cases traced it through several generations. The family history in my case suggests that the last three children may have died from a similar cause and that there may have been some abnormality which developed in the mother as age advanced.

TREATMENT

Tying the tongue forward with sutures [illegible] is dangerous both from local considerations and from the possibility of broncho pneumonia. Splints failed in my case but have been used with success by Eley and Farber. Postural feeding, including feeding the child by lying on his face, may succeed with special care, but the jaw may not develop as fully as after other methods. This makes us realise that the first principle in treatment is to ensure development of the lower jaw. The lower [illegible] naturally reach out and up to [illegible] and [illegible] and Dunn (1933) to suggest another form of postural treatment. First of all the baby should be made to suck upwards. The mother should sit erect when breast feeding and not allow the weight of the breast to fall on to the child's chin. They also suggest an appliance fitted to the feeding bottle, which keeps the mouth a little distance from the teat and thus forces the child to reach out its lower jaw in the effort to suck. This helps the lower jaw to develop and counteracts the deformity naturally. Davis and Dunn show that it is quite probable that the jaw can be made to develop rapidly by mechanical treatments which aid nature. Furthermore, if no effort is made for further development of the lower jaw, adults may be condemned to hypoplasia of the lower jaw with vegetative changes in later life due to maldevelopment of the nasopharynx and imperfect ventilation. Robin (1934) shows that such work can be continued in later childhood.

The prognosis as regards both survival and development of the jaw is quite good in cases that have had suitable treatment, but there is probably a form of hereditary micrognathia running in families which is not amenable to treatment. The occasional cases, provided they have no associated congenital deformity and have developed no atelectasis, can recover with suitable exercises and management. It must be emphasised, however, that they need considerable care and individual attention before they are cured.

CONCLUSION

Micrognathia is not a common disease, but babies suffering from it may die and be labelled as inanition and congenital heart disease. They are not diagnosed and have no treatment. It is therefore worth while drawing attention to the condition, so that it may be recognised and effectively treated.

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MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF MEDICINE

AT a meeting of this section held on Jan 26th the chair was taken by Sir CHARLTON BRISCOE, the president, and a discussion on the course and management of

Congenital Heart Disease

was opened by Prof BRUCE PERRY. He said he thought the best classificatory basis was that of Maude Abbott into cyanotic and acyanotic groups. He would exclude gross malformations and those incompatible with life and unrecognisable clinically. In many cases the exact defects present could not be recognised, even with the aid of radiography. The acyanotic group could be divided into those with no abnormal communications and those with arteriovenous shunt. In the former group could be placed aortic stenosis, coarctation of the aorta, and pulmonary stenosis; in the latter, patent interventricular septum or ductus arteriosus. Late cyanosis might appear in pulmonary stenosis ("cyanose tardive")

In the truly acyanotic cases the malformation had little or no effect on the activities of the patients, though some of them seemed to be liable to sudden death. Their great danger was superimposed bacterial endocarditis. Some 20 per cent of Abbott's cases had suffered this complication. Patients needed no restriction, but every effort should be made to eliminate sources of infection. It was important that these children should live normal lives and not be allowed to develop a cardiac neurosis. Those who might have secondary cyanosis needed the same management and should lead full and unrestricted lives. The cyanotic type of case must be treated according to the depth of cyanosis and severity of symptoms. Those who showed cyanosis very soon after birth rarely survived more than five years; such cases were those of transposition of arterial trunks with patent ductus arteriosus and foramen ovale. If the cyanosis appeared at about the age of five the patient did not usually live much after puberty, but if the cyanosis were deferred to puberty, as in the Eisenmonger complex, life might be long. A moot point was whether cyanosis was incompatible with tuberculosis. Pulmonary infarction in a cyanotic case might be wrongly diagnosed as tuberculosis.

Among school children most cases seen were acyanotic and had a patent septum. Of 87 children attending his clinic all lived perfectly normal and symptomless school lives. Very occasionally complete heart block might complicate a patent septum. Some clinical and pathological data suggested that the foramen in the heart might be gradually obliterated by fibrosis. The hole would not increase in size with the growth of the heart, and the apparent obliteration might be due to this fact. Rheumatic heart disease was frequent among reported cases of patent foramen ovale, though it was difficult to see any direct connexion. The third type of case, which might be called pulmonary stenosis or possibly was sometimes due to patent ductus arteriosus, had a systolic thrill over the pulmonary area. Of 40 such children all lived normal lives, as did another 10 with aortic systolic thrill and murmur conducted up into the neck.

The prognosis in acyanotic cases was, therefore, good. Cases with cyanosis should lead restricted lives, but the prognosis and degree of restriction depended entirely on the severity of the cyanosis and other symptoms.

Dr TERENCE EAST said that diagnosis was usually fairly easy if the patient lived for a few months. Cyanosis depended on hindrance of access of blood to the lungs or on a shunt. Pulmonary atresia was the extreme example. In one case he had seen the blood reach the lungs through enlarged bronchial arteries, the patient having worked successfully as a dental mechanic. Two of his patients had died of pulmonary tuberculosis. Puberty was a critical time. In one case of patent septum the murmur had disappeared at the age of four, probably the smallest holes made the most noise. Patients with congenital heart block often had an open septum, though the nature of the connexion was obscure. He had never seen cyanose tardive. He had notes of 15 cases with pulmonary systolic murmur, enlarged pulmonary artery and loud, palpable closure of the pulmonary valves; all lived unrestricted lives and seemed healthy. Perhaps the lesion was a stenosis with dilated artery beyond it. Some of the cases of aortic stenosis with fused calcareous valves encountered in later life might have started as congenital abnormalities. Coarctation seemed to be well tolerated. All patients being liable to infection on their abnormality special care must be taken of them in all mild febrile attacks Pregnancy seemed safe with patent septum or ductus, provided the ventricle was good but a patient with cyanosis should not run the risk. If the condition was well tolerated acyanotic cases might be accepted for life assurance though the policy must be heavily loaded

Dr C **Muir** described a group of school children to which had been added some infants and adults In the very young diagnosis was difficult if not impossible. Full and unrestricted school life had given no evidence of strain on the heart in the maladie de Roget No case of heart block had been associated with patent septum. Two patients had gradually lost their physical signs. Extreme care of any possible sepsis was the only precaution taken In patent ductus there was some stress on the heart the aorta was hyperplastic and the pulmonary artery dilated though symptoms were uncommon. Each case must be judged on its merits One patient had severe anginal pain Subaortic stenosis had caused 4 deaths (2 from infective endocarditis)

Dr J W **Brown** spoke of cases he had seen at hospital 10 per cent. of them having cyanosis Intelligence seemed quite normal and it was a grave mistake to put these children in special schools If taught to read and write they could support themselves by sedentary work. Ideas of prognosis needed revision these cases might survive many years with a strikingly constant cyanosis Infectious diseases were surprisingly well tolerated but scarlet fever was dangerous Tuberculosis had occurred in several of the older members Nearly all the children were of normal height and weight One patient had become pregnant; labour had been induced in her first pregnancy but she had successfully gone through two subsequent ones. Patients were often disappointed at receiving no medicine but effective and friendly supervision was the important feature of management Oxygen was useless but bleeding was sometimes of temporary value

Dr A M **Gibson** asked whether the acyanotic group—*especially cases of coarctation*—should in adult life be *allowed* to take *part* in competitive athletics He related three cases In the first there was hypertrophy which seemed to indicate a burden on the heart The second had developed aortic stenosis on top of coarctation and had wished to become an air pilot The third was an old soldier with a to and fro murmur such as that heard in patent ductus arteriosus but without enlargement or disability He had lived a very hard life with no symptoms

Dr Evan **Bedford** said that school doctors in London were far too apt to refuse to allow children with congenital heart disease to attend school; this was a grave mistake Cases with dilated pulmonary trunk and pulmonary murmur and thrill were nearly all varieties of pulmonary stenosis and not of patent ductus arteriosus Dilatation was common beyond a simple stenosis The origin was probably a fœtal endocarditis of late appearance Patients with coarctation died either of intercurrent diseases some rupture or endocarditis strenuous effort should be forbidden them in adult life Patent interauricular septum gave no symptoms at birth and cases were not often diagnosed before the age of 20 A characteristic radiogram might be presented: tremendous dilatation of the pulmonary trunk aneurysmal pulmonary artery small aorta and enormous right ventricle enlargement Infarction of the lungs often followed In most cyanotic cases the heart was of normal size Auricular fibrillation and death with congestive heart failure was common but endocarditis was curiously uncommon in these cases of patent interauricular septum They showed cyanose tardive

Dr Leonard **Findlay** said that it was difficult in the acyanotic case to know whether congenital heart disease were present or not 40 to 50 per cent of children had a basal systolic murmur That murmur disappeared as the child got older and its cause was unknown it was to be regarded as functional unless it was due to patent foramen ovale He remembered one child of normal colour for a month who developed sudden cyanosis with a cough and died in a few days post mortem examination showed nothing but patent foramen ovale and extensive broncho pneumonia Presumably the congestion in the pulmonary circulation had caused mixing of the circulations This was probably the pathology of cyanose tardive

Dr Shirley **Smith** recalled an infancy syndrome similar to that described by Dr Findlay within a week or two the twin had also been admitted for the same syncopal syndrome and both had proved to have patent ductus arteriosus. Such cases belonged to the cyanose tardive group

Prof **Perry** in reply said he had never seen congenital heart disease with congestive failure or auricular fibrillation Coarctation was extremely difficult to diagnose and many patients lived active lives with very high blood pressure; nevertheless he would deprecate competitive games He would require a thrill as well as a murmur before diagnosing congenital heart disease

LIVERPOOL MEDICAL INSTITUTION

At a meeting of this society on Jan 21st with Mr G C E **Simpson** the president in the chair a paper on

Congenital Cystic Disease of the Lungs

was read by Dr Alfred **Adams** He said that to explain the increase in the number of reported cases there was no evidence of a greater incidence but that it was more probable that improved radiological technique and interpretation and greater interest in chest surgery had led to better diagnosis He described two cases recently admitted to the Liverpool Sanatorium and diagnosed as suffering from congenital cystic disease of the lung One patient was a boy of 6 on whom a lobectomy was performed by Mr J T Morrison with eminently satisfactory results his records were available from birth Radiograms showed the condition of the lung at 3½ 5 and again at 6 immediately before operation and Dr Adams drew attention to the absence of progressive change that would be expected in infective conditions The other case was that of a man of 38 who had a collapsed or more probably accessory right lower lobe which showed well multiple cysts occupying the whole lobe the other lobes being normal. The speaker preferred to call the condition telangiectatic bronchiectasis He came to the following conclusions about the [illegible] it occurred more commonly than published reports suggested; it was due to intra uterine malformation infection or early extra uterine infection radiography was the best method for its detection but the gross macroscopic changes were greatly in excess of those suggested by the radiograms progress was slow and radiograms taken over long periods showed little advance, symptoms, where not caused by mechanical interference, were due to secondary infections of the cysts, and finally, he believed that surgery offered the best prospect of cure

Mr F RONALD EDWARDS, discussing the ætiology of congenital cystic disease of the lung, went further back than the extra uterine infection theory The most simple explanation of the condition, he said, was that it was purely congenital and due to lack of complete haustration of certain bronchi or bronchioles He compared it with the haustration which occurred during the development of other organs, such as the œsophagus, where the development might be incomplete, resulting in complete lack of opening, or, as one saw occasionally, cyst formation in the area that should have become the organ If in the lungs these cysts were isolated, the condition was one of congenital cystic disease, if, however, they communicated with bronchi, as they might if a further stage of development was presupposed, it became congenital bronchiectasis A further interesting clinical type was the non-tuberculous pulmonary abscess, which developed and on drainage did not clear up, section of the wall usually showed columnar or cubical epithelial cells, and those cases were usually ones of unsuspected congenital cysts of the lung in which suppuration had occurred, thus bringing their presence to light

Prostatectomy with Closure

Mr CHARLES WELLS had prepared a film illustrating Harris's technique of prostatectomy with immediate closure of the bladder In his absence through illness his paper introducing the film was read by the President

Mr Wells said that he had, so far as he knew, been the first in this country to record[1] a short series of cases operated upon by the Harris technique He had, in the meantime, been giving an extended trial to a different type of operation—suprapubic diathermy resection of the prostate—but in the past year had returned to the Harris operation He regretted that he had ever wavered in his loyalty to this operation, for he felt satisfied that of all the methods so far described it offered the patient the shortest and most comfortable convalescence with the smallest post-operative risk For the small fibrous type of gland he preferred McCarthy's transurethral technique, but there was also a small group of complicated cases in which special adaptations of the various means at one's disposal would be necessary Thus, in a small fibrous gland with a large diverticulum it was best to do an open operation and remove the diverticulum and then resect the prostate from above by diathermy He advocated spinal anæsthesia given in the lateral position and carefully controlled by adjusting the level of the spine by means of the kidney bridge In poor risks he favoured an underdose rather than an overdose and suggested that supplementary anæsthesia with gas oxygen should be given On the other hand, he thought that a full general anæsthetic without spinal was contraindicated, since the Harris technique prolonged the operation very considerably The film showed also bilateral vasoligation and by means of special lighting it had been possible to illustrate quite adequately all the steps by which the prostatic bed was repaired Mr Wells said he now liked to use a transverse incision, it was his practice to test the adequacy of the sutures in the bladder before closing the abdominal wall and he had recently reverted to draining the space of Retzius The series of cases upon which the paper was based comprised 30 operated upon by Harris's technique and 20 by McCarthy's in the period of eleven months immediately past

Mr A KIRK WILSON said that he noted in the film that the hæmostatic sutures in the rim of the prostatic cavity were cut short immediately they had been tied. He himself had found that oozing points between the sutures could be controlled if the ends were left long and tied together as described by Harris He favoured a rather longer incision that would allow the surgeon's hand to pass between the recti muscles and make enucleation possible without contaminating the left hand at the rectum The bimanual enucleation seemed to be a retrograde step from the Thomson Walker operation In his most recent cases he had discontinued complete closure of the bladder A small tube acted as a safety valve and in uncomplicated cases there was no contamination of the wound with urine, it could be removed on the fourth day and the average time of confinement to bed was not prolonged more than a few days

Dr W B BENNETT remarked that the subject was of special interest to those who had reached the "prostatic age," and that the improved technique and shorter convalescence would encourage any sufferer to submit to operation with less apprehension than in comparatively recent years

Mr COSBIE ROSS pointed out that many points of interest and importance had been raised. He considered that the secret of success in prostatic surgery lay in accurate selection For example, he quoted a recent personal series of 110 cases which were divided as follows —

Suprapubic prostatectomy	40
Transurethral resection	35
Suprapubic resection	4
Death before operation	6
Conservative measures	16
Refused operation	2
Prostatic enlargement associated with some more serious condition	7

He added that by conservative measures he meant the regulation of fluid intake and output, double micturition, controlled by occasional examination and estimation of the residual urine, and possibly in some cases the operation of Steinach II He disagreed with primary closure of the bladder at the time of the operation Harris himself in his several communications had stated that he regarded the retrigonisation of the prostatic cavity as the essential feature of his operation, although the primary closure has invariably been the focus of widespread interest He emphasised the dangers of the serious complication known as clot retention when a thick adherent clot spread over the base of the bladder, this might occur in spite of the most stringent post-operative precautions When it was necessary the same day or the day following the operation to reopen the bladder in order to remove this clot, the patient's chances were considerably lessened. He had the greatest admiration for the retrigonisation of the prostatic cavity advocated by Harris, and had practised this procedure himself, but considered that drainage with a water suction pump was a reliable and infinitely safer method of conducting the post-operative treatment Using this method, the abdominal wound was kept relatively dry until healing was far enough advanced for the fistula to be closed by strapping over the wound with Elastoplast He added that another objection to the primary closure of the bladder was the large size of the in dwelling catheter required, as this was an occasional cause of meatal stricture

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[1] Lancet 1932, 2, 1268

REVIEWS AND NOTICES OF BOOKS

The Extra Pharmacopœia Martindale

Twenty first edition In two volumes Published by direction of the Council of the Pharmaceutical Society of Great Britain. London The Pharmaceutical Press 1936 Vol. I Pp 1182 27s 6d

THE Extra Pharmacopœia as produced by Martindale father and son was one of the few books which the medical practitioner the analyst, and the pharmacist cannot afford to be without The twentieth edition which appeared just before Mr W H Martindale s death embodied the experience of fifty years and even then he was not satisfied, for he wrote in the preface We plead heart and soul for more sportsmanship in our avocation The Pharmaceutical Society has taken over all that was good in the production and has had at its command the money and skill to revise and reset the whole book.

The editor of this coming of age edition is Mr C E Corfield whose experience as editor of the British Pharmaceutical Codex apart from that gained by many years of research qualified him to take over the heroic task. It is an achievement that in a book running to well over half a million words the editor has been able to include in the appropriate places a synopsis of the Addendum 1936 to the British Pharmacopœia 1932 Thus on page 378 in the monograph on cinchophenum is found B P Add. 5 to 10 grains (0 3 to 0 6 g.) B.P 32 gave max dose 15 grains —and this is not an isolated instance Note also the well-considered use of abbreviations although the full Latin names of substances—e g Carbonei Dioxidum—appear when they must The fuller use of Latin titles is a little unexpected—e g Hepas as the heading of liver extracts including stomach products We welcome the inclusion on page 910 of a reference to the effect on streptococcal infections of Prontosil and some of its derivatives given by mouth. No page has escaped revision but what is more remarkable is the amount of the original text which was considered worthy again to see the light in these more sophisticated days. Even the therapeutic index at the end has been taken over In fact we miss nothing except an unimportant table of infectious diseases. Some rearrangement has proved desirable. Instead of hormones and glandular products being grouped in one section entitled animal organotherapy they are now distributed in separate sections under the headings adrenaline œstrin and so forth Space has been saved by deleting notes on some of the older drugs The book carries still further than before the entry of synonyms and proprietary names the asterisk and registration numbers given in the old Martindale have now been replaced by the name of the manufacturer and/or agent and the town a system which has been tried out and proved in an appendix to the B.P C 1934

The materia medica alphabetically arranged occupy 922 pages and the section of vaccines, sera toxins and antitoxins accounts for 66 of the remainder The rest of the space is chiefly occupied by what is virtually a monograph on poisons and their relation to medical and pharmaceutical practice The arrangement is most convenient and the medical man who keeps the new Extra Pharmacopœia on his desk will rarely be caught out in his interpretation of the Poisons Rules

The Truth about Bright s Disease

By WILLIAM R OHLER, M.D Harvard University Cambridge Mass London Humphrey Milford Oxford University Press 1936 Pp 80 4s 6d

ASSUMING that the layman wants to know about Bright s disease it would be hard to find for him anything more suitable than the present item in the series called Harvard Health Talks Different aspects of the disease are outlined in simple non-technical language and if it is over-simplified in places allowance must be made for the complexity of the subject In the interests of accuracy however it should not be said (p 26) that casts are caused by damage to the glomerular tufts While in many instances their presence is associated with such damage there are conditions such as Bence-Jones proteinuria where the tufts are uninjured Many may pick up this book to learn what they can of prognosis hence it is deplorable that the bugbear of renal failure should be paraded in connexion with persistent idiopathic hypertension Uncomplicated simple ischæmic nephritis does not entail renal failure Though it can hardly be recommended as a bedside book for the nephritic, it might be read with profit by those who have the care of children They might as a result more often summon the family doctor when infections are complicated by symptoms suggestive of acute nephritis It cannot be doubted that many of the milder attacks of nephritis in children pass unheeded only to lay up trouble for the future and of no disease is it truer than of Bright s disease that in early treatment lies our only hope

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Disability Evaluation

Principles of Treatment of Compensable Injuries By EARL D MCBRIDE B S M.D F.A.C S Assistant Professor in Orthopedic Surgery University of Oklahoma School of Medicine &c Philadelphia J B Lippincott Company 1936 Pp 623 38s

IN this country the Workmen s Compensation Acts provide for the payment of compensation to a workman so long as he is incapacitated from earning by reason of an injury sustained at work. The amount of his compensation is calculated upon his loss of earnings, not upon his anatomical imperfections Similar Acts in the United States of America base the payment of compensation on the anatomical or physiological defects resulting from injury its amount being related to pre accident earnings In Oklahoma where the author practises loss of the entire arm is compensated at 250 weeks payment loss of the hand at 200 weeks Partial loss of the hand would be assessed at some percentage of 200 week Dr McBride s aim has been to resolve all injuries into terms of percentage loss to the limb or to the whole body—to determine as he puts it in the preface the extent of personal incapacity estimated with arithmetical preciseness

On p 47 is given the key to his method. He takes the normal part and divides full working capacity into the following percentage factors quickness 10; coördination 20 strength, 20 security 10; endurance 20 safety 10 and physique 10 Functional incapacity is estimated by factors with percentage values as follows; slowa tion 10 awkwardness 20 weakness 20 insecurity 10 fatigue

20, increased risk, 10, and impaired prestige, 10 He does not expect everyone to agree with him in his allocation to the various factors, someone may wish for instance, to increase the value of weakness in functional incapacity to 40 per cent, but if this is done other factors must be decreased accordingly Working with this key, tables are given in which an attempt is made to estimate the percentage of incapacity in almost every type and condition of injury Taking at random a few examples—total ankylosis of the wrist in 70° dorsiflexion is equivalent to 27 6 per cent total loss of the arm, ankylosis of the thumb at the carpo metacarpal joint in abduction equals 26 5 per cent loss of the thumb, ankylosis of the elbow in full extension equals 56 per cent loss of the arm Tables are given of the period of incapacity likely to result from any particular injury On p 541 we are told that the average period that will elapse before a man should return to work after complete division of the median nerve "treated by operation over three months" after the accident is 64 weeks, sciatic nerve, 64 weeks, musculo spiral, ulnar, and peroneal nerves, 52 weeks These figures are given as the "approximate normal healing period in peripheral nerve paralysis" No attempt is made to differentiate between types of work so that complete recovery both of epicritic and protopathic sensation as well as of muscular power must be assumed at the end of the period stated On p 237 we are told that complete dislocation of the knee joint requires eight weeks' surgical care, twelve weeks' observation, and is able to begin work in 36 weeks, and on p 128, that destruction of the shoulder joint with suppuration has an average period of surgical care of 16 weeks and is able to begin work in 52 weeks

The idea of this book is well conceived Unfortunately injuries to the human body cannot be "evaluated" by abstruse mathematical calculations in a study Only by long experience of actual examination and by the careful follow up of large numbers of cases—not only until they cease treatment but until they have remained at work for a period of months—can any accurate estimate be obtained of the disability that may result from certain injuries in certain types of work. The danger of this kind of book is that it may be bought and quoted by medico legal experts in court We hope that the American courts will take a more generous view of the workman's injuries than does the author

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The British Journal of Surgery

The January issue (Vol 24, No 95) contains the following articles —

ROTATION AT THE SHOULDER A CRITICAL INQUIRY By Leo McGregor (Johannesburg) Arguments are advanced to show that full abduction of the humero scapular joint involves full external rotation and similarly that full flexion is possible only with full internal rotation The author proposes that it is not essential in treating recent injuries of the shoulder joint to restore the full range of abduction and he advocates a position midway between full abduction and full flexion as being both comfortable and convenient

MALLET FINGER By I S Smillie (Edinburgh) Satisfactory results were obtained in 35 patients who were treated by the method here described for rupture of the extensor tendon at its insertion into the base of the terminal phalanx A tube of Cellona plaster bandage is applied around the finger It dries whilst the patient holds and presses the joints in the required position of flexion of the proximal interphalangeal joint and hyperextension of the terminal joint

BLOOD PRESSURE DURING SPINAL ANÆSTHESIA By E Falkner Hill (Manchester) A pronounced fall of blood pressure has been observed in acute abdominal cases occurring spontaneously with the relief of pain This is regarded as primarily due to abolition of pressor impulses by the spinal anæsthetic and, except in cases of severe dehydration, calls for no special treatment

A COMPARISON OF THE RESULTS OF SPINAL FIXATION OPERATIONS AND NON OPERATIVE TREATMENT IN POTT'S DISEASE IN ADULTS By G K McKee (Norwich) In investigating 150 patients over sixteen the conclusion was reached that fixation by bone graft is contra indicated in the active stage of Pott s disease, since it delays anterior fusion of the bodies without providing sufficient posterior fixation to stabilise the vertebral column It gives good results in late cases of fibrous union, where anterior consolidation has progressed as far as possible

GASTROSCOPY ITS HISTORY, TECHNIQUE AND CLINICAL VALUE, WITH REPORT ON SIXTY CASES By Hermon Taylor (London) The instrument used is a flexible gastroscope, capable of transmitting an image despite a moderate degree of curvature of the tube, and its use is described as painless, safe, and reliable The value of the method in the diagnosis of gastritis, ulcer, and cancer is fully illustrated in the reports

FUNNEL NECK DEFORMITY OF THE BLADDER By J B Macalpine and D S Wilson (Salford) The deformity is considered to be due to weakness of the internal sphincter at the base of the bladder It occurs typically in syphilis of the central nervous system, but is found also apart from nervous disease It is demonstrated by cystoscopy but rarely by cystography

THE ASSOCIATION OF INGUINAL HERNIA WITH TRAUMATIC PERFORATION OF THE INTESTINE By Ian Aird (Edinburgh) Four cases are reported in which rupture of the intestine and peritonitis followed acutely on an abdominal injury The mechanism suggested is a traumatic force acting on a loop of intestine fixed at the ileocæcal or duodenojejunal junction and gripped at the other by contraction of muscles at the hernial orifice

CHRONIC PEPTIC ULCER OF THE ŒSOPHAGUS A REPORT OF EIGHT CASES By Alexander Lyall (Glasgow) The ulcers were incidental findings during post mortem examinations There were two main types, one shallow and extensive, the other smaller but deeper and associated with heterotopic gastric mucosa

RENAL RICKETS By N L Price and T B Davie (Bristol) The condition is defined as "a disease of childhood characterised by skeletal demineralisation with resultant deformity and associated with chronic renal disease, which in uncomplicated cases terminates in uræmia" The relationship to hyperparathyroidism is discussed The case described is regarded as being primarily of endocrine rather than of renal origin

CHOLESTEROSIS OF THE GALL BLADDER A REVIEW SUPPLEMENTED BY PERSONAL OBSERVATION OF 87 CASES By W Arthur Mackey (Glasgow) The view is taken that "strawberry gall bladder' is not a specific lesion and is not necessarily associated with inflammation Symptoms when present are due to coincident gall stones, which occur in one third of cases or are functional in origin and are unrelated to the lipoid infiltration of the mucosa Cholesterosis does not demand removal of the gall bladder

TOXIN FORMATION IN BURNED TISSUES By W C Wilson, J S Jeffrey A N Roxburgh, and C P Stewart (Edinburgh) The toxic nature of œdema fluid formed in burned tissue is demonstrated by experiments on rabbits and mice The toxicity is absent at 4 hours and maximal at 48 hours it affects the nervous system the circulation and the central cells of the liver lobules The toxin appears to be associated mainly with the globulin fraction

A visit of the Moynihan Surgical Club to Prof Grey Turner at the British Postgraduate Medical School is described and there are also brief descriptions of several cases of special interest

THE LANCET

LONDON SATURDAY FEBRUARY 6 1937

RENAL TUBERCULOSIS

Modern methods of clinical examination such as cystoscopy and pyelography have added much to the precision of diagnosis in tuberculosis of the kidney and the recognition of the early case is altering our conception of the disease In other organs too notably the lung tuberculosis is being diagnosed earlier with the result that renal tubercle has fallen into its right place as part of the picture of a chronic infective disease in which there is metastasis in the kidney often accompanied by metastases elsewhere A few weeks ago Mr Hugh Lett in the Bradshaw lecture gave an illuminating account [1] of tuberculosis of the kidney in this modern setting He quoted figures to show that in the cases coming to nephrectomy there was evidence or a history of tuberculous disease elsewhere in 84 per cent The experience of other writers tends in the same direction In our present issue Dr M C Wilkinson reports cases of genito urinary tuberculosis at Black Notley Sanatorium of which 62 per cent had lesions elsewhere the largest number being in the skeletal system On the other hand Mr Frank Harvey s figures on another page show only 17 per cent of cases with lesions elsewhere the majority of them again being in the bones The prevalence of pulmonary lesions is not much less—a point brought out in Dr Wilkinson s figures There is therefore fairly good evidence now for believing that tuberculosis of the kidney is in the main a metastatic lesion the emphasis has consequently *shifted from* the local to the general care of a tuberculous person

Another point brought out both by Mr Lett and Dr Wilkinson is the greater prevalence of the disease in adults In a recent study [2] however Dr C P Mathé of San Francisco has found 10 per cent of his 4698 cases of unilateral renal tuberculosis in the second decade of life and he relates recovery after nephrectomy in two children a girl of 8 and a boy of 10 Dr Wilkinson suggests that the lymphatic system is a better barrier against the generalisation of the infection in childhood than it is later in life There are probably other factors Chronic tuberculosis is a disease of adult life its pathological picture is different from that seen in children and the renal lesion is a prominent part of the adult infection These facts have a bearing on the question of operative treatment In Mr Lett s opinion nephrectomy is not an operation of urgency for renal tuberculosis Early cases and those in which the symptoms are acute should undergo general treatment first all the writers mentioned insist upon the value of sanatorium treatment which is as necessary before as after operation Treatment of the tuberculous kidney is in fact following in the wake of treatment of the tuberculous joint operation if it is performed is to be regarded as an unwelcome necessity With all the progress that has been made the prognosis of renal tubercle is still grave Recovery from unilateral disease after operation is placed by Mr Lett at 55 to 60 *per cent* for the hospital class of case and 80 per cent for the well to-do In bilateral disease the outlook is grim but Dr Wilkinson s figures show rather unexpectedly, that in the sanatorium even the association of genital with renal tuberculosis does not appear to increase the gravity of the disease Many of these points were emphasised at a recent meeting of the section of surgery of the Royal Academy of Medicine in Ireland Early diagnosis and sanatorium treatment are the things to aim at Operative treatment should only be undertaken after a careful survey of all the facts and with the full realisation that renal tuberculosis is part of a general infection

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[1] *Lancet* 1936 2 1313

[2] *Surg Gynec Obstet* 1936 63 2

PENNY-IN THE-SLOT PATHOLOGY

Under the title the Pathological Yardstick Dr L G Cole of New York has written [1] on the diagnosis of malignant gastric lesions Out of 51 specimens of stomachs examined microscopically between 1927 and 1932 he chose 8 they did not represent straightforward cases but he claims that 8 out of 51 routine examples cannot all be rarities Sections from these specimens were shown or sent to a score or so of eminent American and Canadian pathologists who were asked to make diagnoses and give the grounds on which they were based The divergences of opinion are remarkable and taken along with Dr Cole s accounts of the patients histories and of his own radiological findings they make amusing reading In Case II 23 out of 24 pathologists diagnosed a malignant condition some carcinoma some sarcoma or lymphosarcoma only one regarded the lesion as a chronic inflammatory one and he seemed to be justified in Dr Cole s view because the patient was alive and well 12 years after her partial gastrectomy In other cases the pathologists were more nearly equally divided in their decisions for or against malignancy Dr Cole seems to have been so distressed at their lack of unanimity that he has undertaken the study of microscopic sections himself and promises us shortly another article in which he will describe 25 points of differentiation of new growing tissue from inflammatory lesion 25 points moreover of which not a single one was recorded in the reports of the criteria of his 24 pathologists

This threatened invasion of its territory may rouse a little apprehension in the pathological world but at the same time it gives the pathologists an opportunity to protest against a common misconception of their function Dr Cole seems to regard them as penny in the slot machines drop in a slide pull the handle —and why are the reports not all identical? The morbid anatomist function is to study the structural changes in the tissues of diseased animals, including man When he brings that study to the service of patients, he is entitled to see the whole of a surgical specimen, to direct the cutting and staining of sections himself, and, if he wishes, to know the patient's history, perhaps he should exercise that right more fully than he often does He is also entitled to disclaim omniscience, there is much in morbid anatomy that he does not yet understand—otherwise it would not attract good men to its study—and the clinician has no business to demand a yes or no answer even to such an important question as the presence of malignancy Honest doubt, with the reasons for it, is a better contribution to pathology, and in the long run to the management of patients, than cocksure dogmatism with a dash of guesswork in it The final responsibility in diagnosis and treatment rests always with the physician and the surgeon Laboratory help nowadays is so extraordinarily valuable that the temptation to rely on it blindly is very strong Yielding to that temptation leads to two evils mistakes, from which the patient suffers, and a degenerative process among the laboratory workers themselves, who, in seeking to meet the demands so made on them, neglect the intelligent study of their subjects and convert themselves into automatic machines

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[1] *Surg Gynec Obstet* [illegible] 193 p 6 7

It is just this problem which has provoked Dr DYKE's presidential address to the Association of Clinical Pathologists, which we print on another page The clinical pathologist is the pathologist whose interest lies chiefly in the service pathology renders to medicine Since medicine has always as its prime task the day to day care of patients — diagnosis, prognosis, and treatment — these matters make also a first claim upon the clinical pathologist's activities Dr Dyke argues that, to meet that claim, the clinical pathologist must not only be a master of his own extensive laboratory techniques but also be something of a physician himself He must have had a good training—and preferably a higher qualification as evidence of it—in clinical medicine, and he must remain always in the closest touch with physicians and their work in the wards Such cooperation is certainly essential if the physician is to make the fullest and, at the same time, least wasteful use of the laboratory, and if the laboratory-trained worker's precision of thought is to have its proper influence on the medical mind Dr Dyke's ideal head of a pathological department is to be trained in this way, he is to be a technically expert morbid anatomist, biochemist, bacteriologist, and hæmatologist It is a large order, and it leaves no room for contact with non clinical pathology in any of its branches, or for any excursion into experimental medicine For the smaller hospital, however, there is no good alternative, its pathological departments must be first and chiefly "clinical" In the large university or teaching hospital, on the other hand, we feel that the pathological department has a wider function—the study of pathology in all its aspects, with the advancement of knowledge as its supreme aim The hospital naturally provides much material for this study, but is not its only source, the department in return renders service to the hospital and for this purpose must have among its staff many members whose training and outlook towards medicine are what Dr Dyke describes, though they will more often confine themselves perhaps to one branch or another of pathology, not each trying to be competent in the whole technical field So the pattern of development may vary in different parts of the medico scientific organism, which has to evolve a long way yet, with much differentiation and integration of structure and function The clinical pathologist is a cell which may at present be a little difficult to assign to one germinal layer or another, but there is no question of his increasing value and importance The essential thing is that he shall not lose his nucleus

THE RUSSIAN TRIALS

THE two State trials in Moscow have shocked those of us reared in the tradition that the first duty of a court of justice is to ascertain facts, and that none should be adjudged guilty except on unshakable evidence There has been speculation about the methods used to evoke, from revolutionaries so tough, confessions so abject and so damning Can they be the result of torture, mental or physical, do the Soviet police use drugs, or hypnosis, to break down resistance or implant falsehoods, can the strange behaviour of the accused be explained by their unstable temperament, or is the whole affair a hoax staged by a dictator for his own purposes? The suggestion that drugs are used is nowadays not as wild as it might have seemed a few years ago It is recognised that injections of barbiturates such as *Evipan, Nembutal, and Avertin produce in suitable dosage a dreamy state of mind in which a patient may lose his inhibitions and talk more* freely about his past experiences Partial narcosis of *this kind is sometimes employed in mental* therapy when the object is to get information that will throw light on the patient's neurotic trouble The rôle of the drug is to increase the rapport between patient and physician, but it does not open the unconscious mind as one lifts the lid of a box, and the work of interpreting what the patient says is made difficult because facts and fantasies come forth all mixed up as they appear in dreams—in other words, they offer clues, not evidence Drugs, furthermore, do not permanently change the attitude of mind towards persons or things, though they may favour tendencies to change of outlook or attitude In the patient's mind there is always a picture of the person giving the drug with good or evil intention according as the patient is guided by his unconscious fantasies

The drug hypothesis alone does not explain the apparent volte face in these Russians, but there may have been a combination of drug and hypnotism The word hypnotism is used in different senses, and if one regards it as the overpowering of the subject's will by the superior "force" of the hypnotist, one would not expect it to be very successful in changing some of the most vigorous and masterful minds in Europe Another and wider view of hypnotism however connects it with the impulse of submission The patient identifies the hypnotist with his own conscience and at least for a time accepts his standards and commands as if they emanated from himself On this view hypnotism is an example of the process of accepting another attitude of mind towards people and events—a process which is most active in infancy and adolescence and which accounts for the phenomena of religious conversion and for sudden changes in people of unstable temperament The mental impulses responsible for hypnotism are closely linked with those that bring about the submission of the group to a leader men will unwittingly (by a process of idealisation) set up their political leader or dictator in the position of a mental ruler or law giver in their own minds The readiness to submission can be traced to the attitude of emotional submission which the infant experiences towards its parents and which later by substitution is displaced on to the community in the form of submission to social conscience

This was no common trial of common prisoners two rival attitudes towards revolution are represented. **STALIN** stands for a concentration of energy upon an improvement of the conditions in the U S S R aggressive impulses being directed in the main upon inanimate nature—harnessing rivers conquering the Arctic and so forth Some of the old guard of the Revolution on the other hand wish to see the immense force of the aggressive impulse in the Russian people turned to world revolution—a world revolution that must begin moreover by overturning at whatever cost the present conservative rulers of the Russian State From a psychological standpoint the issue depends on the decision where to turn aggression. Of course aggression cannot be turned like a turret gun now here now there but one policy can give expression to fantasies and impulses that see revolution rising in every quarter of the world another can express the desire to get satisfaction from beating the Western nations at their own game of mechanised production from grandiose schemes of record breaking canal-digging and so forth Above all the revolutionary must be successful He employs the dangerous weapon of aggressive revolt (in contrast to the inturned or passive revolt of the Ghandi type) and the excitement it rouses makes for instability and the overaction of feelings of guilt His constructive impulses (contrary to what is usually supposed) are often very strong and to the social psychologist the revolutionary differs from the reformer chiefly in the reactions of guilt arising when an attempt is made to change the old order If he fails his mental peace is endangered not merely by the thought of toil wasted and hopes destroyed but by a burden of unsublimated hate that finds no outlet To all this we must here add the ingredient of self revelation and self torture dear to the Russian heart the pangs of conscience which are the warp and weft of Russian novels and now appear in the repentances of lazy comrades in the factory wall newspapers lend power to the central government both by reinforcing submissiveness and by giving colour to its puritan politics The kind of State trial we have been witnessing was not a foreign thing to the accused it is nowadays found wherever the concept of a Perfect Ruler is thought to be a necessity Under the old régime in Russia the trial of the Jews for ritual murder of a Christian boy was a method of diverting hatred from the Czar and Church the Jews again are scapegoats in Germany to-day for a similar reason and the men now executed themselves belonged to a party that sees everything as pure Red or pure White The analogy that has been drawn for English readers that the indictment is as fantastic as if **LLOYD GEORGE** bargained with Germany for an invasion of England by promising that **HITLER** should have Yorkshire is quite beside the mark. Politics in England are not a matter of perfect Kings and Premiers and wicked Opposition but of compromise between people not wholly right or wrong We in England find the trial and the confessions incredible because we cannot credit sane men with extremist views and passionate remorse But the Russians (under old or new régime) run to both

MEDICAL HONOURS

THE highest honour for a practising medical man in this year's list (see page 352) is the K C V O. which goes to Mr John Fraser regius professor of clinical surgery in the University of Edinburgh. Four of the 20 knights bachelor are doctors Medical research receives recognition in the persons of Prof J C G Ledingham F R S and Dr J A Arkwright F R S It is fitting that these two eminent collaborators at the Lister Institute who worked together in earlier days and have since developed different branches of bacteriology should be knighted at the same time Prof Ledingham has of late years been concerned with the study of viruses notably that of vaccinia and more recently of the Rous tumours and Dr Arkwright by his work on foot and mouth disease and tuberculosis has linked the activities of the Medical Research Council and the newer Agricultural Research Council of which he is an active member Dr E K Le Fleming a practitioner member of the General Medical Council guided the deliberations of the Representative Body of the British Medical Association with conspicuous success and is now the esteemed chairman of the council of the Association Dr Morris-Jones who practised in Colwyn Bay for twenty years and is consulting honorary physician to the West Denbighshire Hospital, is honoured for his political services culminating in his work as Junior Lord of the Treasury Major General T S Coates deputy director of medical services Aldershot Command receives the C B and so does Major General A W M Harvey who holds a corresponding post in the Northern Command India Dr W H Kauntze director of medical services Uganda Protectorate receives the C M G Of these honours left for a fourth associated with medicine special mention is due to the efforts of Lady Williams who is made D B E to secure more comfort and safety in childbirth for British mothers

ANNOTATIONS

EARLY CANCER AND RADIOTHERAPY

In common belief cancer is still an incurable disease It is because of this belief that the use of the word is avoided, and it is the reason for much of the delay in seeking advice The patient who suspects the presence of "cancer" is apt to assume that if his fears are correct nothing more can be done, and even the practitioner is tempted to try some mild form of treatment before sending a patient to a cancer therapy centre because of the alarm aroused when he makes the suggestion The Christie Hospital and Holt Radium Institute have wisely made use of their annual report[1] to emphasise the curability of early cancer They deal in particular with X ray and radium therapy, although they remind us that in certain sites surgery remains pre eminent It is claimed that this survey covers practically the whole range of common cancers, except those of the digestive system In 1933 1013 cases of cancer were treated, and of those 536 were alive three years later—53 per cent The figure includes all the cases treated, the early with the late, and the importance of the stage of the cancer is brought out by the figures for cancer of the mouth Of the cases treated in 1929, 15 were early and 60 per cent survived five years, of the remaining 137 more advanced cases 20 per cent survived five years, none of the very advanced lived even for three years The figures for cancer of the breast, womb, skin, &c, are similar, and the report goes on to say that the results depend not only on the disease but on the possibility of obtaining correct treatment at an early stage

This is the crux, for in the long run the cancer patient will come to the place at which he receives speedy and effective relief Arrangements for this purpose in Manchester are excellent, including, as they do, a regional scheme for radium treatment on which we recently commented in a leading article[2] The Manchester Institute is happy in having secured Prof J S B Stopford as its vice chairman and in having a committee of management anxious to develop the hospital and its services It is not only the extension of services to patients living at a distance, but new building and plant, including four additional X ray outfits, will soon be available and will make the department one of the largest and most modern X ray units in the Empire A collateral expansion is going on at the same time in the physics department The scheme tacitly recognises the fact that radiotherapy is both expensive and difficult, it is only with a highly trained and skilled staff and adequate team work that the dangers can be eliminated Institutes like this with their large numbers of cancers of various regions—227 cases of cancer of the mouth and 161 of the womb were treated during the year—can do good not only by curing their quota of patients but by the clinical research which determines the best measures and procedures, so that in time it is possible to deal safely and efficiently with certain types Such centres too provide the special training in radiotherapy required for the national centres, almost all of which now include X rays with radium for the treatment of cancer The supply of radiotherapists is still very limited, it is a small specialty which is growing daily in importance Only a centre with long experience and a permanent radiological staff can supply the teaching and clinical material.

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[1] Report for the year ending Sept 30th 1936 From the secretary of the Institute, Wilmslow road Withington Manchester

[2] *Lancet* 1936 2 1277

HEALTH OF THE ROYAL AIR FORCE

Reports on the health of highly selected groups of persons must always provide some points of interest and although the Royal Air Force has not yet come of age, so that the more recent reports on the state of its health cannot as yet be contrasted so sharply and compared so favourably with previous reports as can those of the older services, the report[1] for 1935 makes tolerably cheerful reading It is satisfactory, for example, to learn from the report that the incidence of sickness shows a decrease of 6 per 1000 of strength, for cases admitted to hospitals and sick quarters, below that for 1934, and is the lowest figure so far recorded. Similar low records are noted in the incidence of venereal disease, the figure for which has fallen from 9 9 to 9 5 per 1000, and in the number of invalidings from the service which fell from 5 1 per 1000 in 1934 to 4 8 in 1935 Still more strikingly satisfactory is the decrease in the incidence of injuries and diseases among apprentices which has been halved, the figure per 1000 of personnel having fallen from 115 2 to 57 3 With so much on the credit side, it would be too much to expect to find nothing on the debit side of the account and the most regrettable feature of the report is an increase in the death rate to 4 8 per 1000, but when comparing this with the previous figures of 3 8 for the period 1928–34 and 4 3 for 1921–27, it should be borne in mind that the Quetta earthquake was responsible for 52 deaths, a contingency against which the medical services could not provide and which, it is earnestly hoped, is unlikely to arise again in the near future Far less tragic but perhaps, in a sense, more disquieting, is the marked increase of upper respiratory tract infections among apprentices, the incidence of which almost doubled itself, rising from 267 9 per 1000 in 1934 to 514 2 in 1935, suggesting possibly a lowering of resistance due perhaps to inadequate ventilation, or massive droplet infection occurring in shops or sleeping quarters or some such remediable factor It is, however, only fair to state that energetic measures to prevent such infection have already been taken at Halton which was the scene of two epidemics

The report is full of statistical data and contains many easily comprehensible charts and tables An interesting table of medical causes of rejection for flying duties shows that defective vision was by far the commonest single cause, rejections for this being almost equal to the total number rejected on general medical and surgical grounds The main causes of final invaliding from the service were first diseases of nervous origin which include mental disorder, epilepsy, and the psychoneuroses This group accounted for 46 invalidings out of a total of 118 Other major causes were tuberculosis (26 cases), ear and nose conditions (14), injuries (12), acute rheumatism and urinary disease (11 each), and diseases and deformities of the limbs (10 cases) Among the principal medical causes of temporary non effectiveness were first, injuries, secondly, gonorrhœa, and thirdly, upper respiratory tract infections with tonsillitis a bad fourth and influenza curiously enough among the also ran. Of the four geographical areas in which the R.A.F. operates the United Kingdom appears to be the most healthy Iraq the least, with the Mediterranean Littoral and India between the two. The incidence of venereal disease however though greatest in Iraq is lower in India than in the United Kingdom. The report shows that there has been a gratifying decrease in the incidence of many diseases abroad as well as at home notably in such conditions as dysentery malaria and phlebotomus fever. An increase in the number of cases of psychoneurosis occurring abroad is attributed in part at least to the Quetta earthquake and this catastrophe also accounted for a slight increase in the incidence of injury. An appended summary of the laboratory work carried out both at home and abroad shows a total of 54 885 special investigations done. Over 16 000 chemical or bacteriological investigations of urine were undertaken nearly 10 000 throat and nose swabs examined and 4051 samples of water were analysed mostly in Iraq. Many other investigations such as blood counts and examinations of blood for malaria, Wassermann reactions bacteriological examinations of pus and fæces, and microscopic examinations of skin scrapings and hairs from fungi were also carried out on a large scale.

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[1] Air Ministry Publication 875 (1935) H M Stationery Office Pp 101 2s

At the hands of R.A.F. dental officers the personnel in the United Kingdom Mediterranean Littoral and Iraq received much dental treatment, and 9830 were rendered dentally fit during the year. Another 981 were brought to the same happy state by army dental officers in India Palestine Transjordan and Sudan.

ROYAL NATIONAL HOSPITAL FOR RHEUMATIC DISEASES

THE Royal Mineral Water Hospital at Bath dates back to Roman times and the modern foundation is based upon an Elizabethan Act which established the hospital for the poor from all parts of the country to benefit from the springs. For a time the Act was interpreted to mean that the inhabitants of Bath could not receive treatment at the hospital and even at the present day only 2 per cent of the patients are drawn from the city. As 25 per cent. of the patients have their homes in the London postal district there was justification for launching an appeal last week in London for the rebuilding of the hospital now renamed the Royal National Hospital for Rheumatic Diseases at a cost of £200 000. Sir Edward Grigg who presided at the meeting held by courtesy of the Vintners Company at the Vintners Hall in Upper Thames-street told of the arrangement by which the Bath city council had provided a site nearly four times as large as the present one and nearer to the springs. Two of the governors Mr Sidney Robinson and his daughter Mrs Prince had offered to contribute £50 000 provided that the foundation was laid within twelve months. Accommodation would be provided for 250 patients nearly 100 more than in the present hospital. Sir William Willcox speaking as vice chairman of the Empire Rheumatism Council welcomed the extension of the hospital as a greater opportunity for research into rheumatic diseases. Lady Snowden following Sir Francis Younghusband who spoke as a resident of Bath seventy years ago directed attention to the economic loss due to rheumatism. The cost to national health insurance is, she said £5 000 000 a year loss of wages amounts to four times that sum the equivalent of 6 000 000 weeks of work. The president of the hospital Mr C. G Mackay in thanking the speakers explained that funds were available to maintain the hospital, even with the additional beds their concern was to raise the money for a building which would benefit patients from all parts of Great Britain.

BLOOD CHANGES IN ECLAMPSIA

A FEW writers on eclampsia manage to keep their feet firmly planted on the ground of established fact but the temptation to rise on the waxen wings of fancy has made many share the fate of Icarus. Papers based on information rather than speculation are accordingly as welcome as they are uncommon and two recent examples deserve some attention. In the first Dr W J Dieckmann[1] reports the results of a large number of measurements of the hæmoglobin cell volume, and serum protein content of the blood in toxæmic and normal pregnancy. In eclampsia he finds that all three are generally raised sometimes relatively—that is compared with figures obtained at the same stage of normal pregnancy but often considerably beyond the normal limits in non pregnant women. The most obvious explanation of such increases is that water has escaped from the blood into the tissue spaces, and by direct measurements of total blood and plasma volume Dieckmann has shown that this is so. The lowered blood volume is most conspicuous when the convulsions coma and visual symptoms are most intense and it disappears as the clinical condition improves. In three fatal cases the blood remained concentrated in spite of intravenous injections of fluid.

It is evident from Dieckmann's paper that anhydræmia is not the cause of the eclamptic crisis but a secondary phenomenon. A clue to its probable cause is provided by the earlier work of G Haselhorst and K Mylius[2] concerning retinal changes in eclampsia. According to these authors the retinal vessels can be seen in a state of focal spasm, which is later overshadowed by exudate from the vessels. It is well known that vasoconstriction tends to increase the permeability of the vascular endothelium and there are good grounds for the suspicion that vasoconstriction is not confined to the retinal arteries in eclampsia. The presence of anhydræmia is accordingly consistent with what may be termed the pressor hypothesis of eclampsia but the cause of the vasoconstriction remains as obscure as ever. Dieckmann's observations also revive the question whether in spite of the œdema, intravenous injection of fluid may not after all be indicated in eclampsia. This question can be settled only by clinical trial but it seems doubtful that the fluids ordinarily used will remain in a leaky vascular channel long enough to lend material help to the patient.

In the second paper Dr J M Boyd[3] describes studies of the lipoid content of the plasma and red corpuscles in 40 cases of pre-eclampsia. He has been chiefly concerned with the phospholipoids (lecithin &c) and total cholesterol. The ratio of the former to the latter is apparently normal in some cases and abnormally high in others. Since the ratio is also high in eclampsia he suggests that the latter group of patients may be nearer the eclamptic state than the former. It is possible that the ratio may be useful in gauging the prognosis in pre-eclampsia, but the accurate estimation of blood lipoid is by no means simple and it is not certain that the clinical examination would not give equally reliable information Beyond this there is little to be said Not much is known about the significance of blood cholesterol in health, let alone disease, and still less about that of the phospholipoids An empirical quotient derived from two such mysterious entities could therefore hardly be expected to throw any light on the nature of eclampsia

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[1] Amer J Obst Gynec December 193[illegible] p [illegible]

[2] Zbl Gynäk 192[illegible] 52 11[illegible]

[3] Amer J Obst Gynec December 1936 p [illegible]

EXPERIMENTS WITH A MICROVISCOSIMETER

SINCE the viscosity of plasma depends mainly on its protein content, the determination of the plasma viscosity should be a rapid and convenient alternative to the estimation of the plasma proteins Unfortunately methods for the estimation of the plasma viscosity have suffered from two disadvantages, one being their relative inaccuracy and the other that a fairly large volume of fluid is required T Satô (*Nagoya J med Sci* November 1936, p 187) describes an accurate method requiring only 0 2 c cm of fluid, using a simple viscosimeter of his own design He shows that with this method contamination with hæmoglobin does not cause a noticeable inaccuracy until the serum appears intensely red He finds that the serum viscosity of Japanese subjects, while varying widely in different individuals, tends to decrease with age, and that in similar age groups it is higher in males than in females Serum dilution brought about in various ways—e g, by bleeding and allowing the physiological restoration of the blood volume to take place, by replacing lost blood with Ringer's solution, and, in humans, by ingestion of a litre of water or physiological salt solution—led to an appreciable reduction in serum viscosity He also showed that though physiological saline took a longer time than distilled water to reduce the serum viscosity to its minimum level, the reduction achieved with saline was longer maintained The method should be of value for investigating the efficiency of treatment of anhydræmia such as occurs in infantile diarrhœa, cholera, and post operative shock

PNEUMONIA IN CHILDHOOD

PNEUMONIA in children differs so much in clinical manifestations, and particularly in prognosis, from pneumonia in adults that typical examples as judged by adult standards are almost the exception, while the so called atypical forms are the rule This is emphasised by Prof R Pierret,[1] who shows how much our knowledge of this disease has been increased by radiography The illness often runs its course with hardly any of the proper signs in the chest At the onset the rigor is missing, there is no stabbing pain in the side, the cough may be absent, and there is no sputum In fact fever is almost the only constant disturbance Pierret lays stress on the importance of auscultation high up in the axilla where a small patch of fine rales may be discovered

A central pneumonia usually appears in a radiogram as a triangular shadow with its base in the axilla Breton and Christiaens[2] describe several other varieties of triangular shadows and their modifications such as the linear strip across the middle of the right side of the chest when the disease affects the lower part of the right upper lobe Pneumonia in the right middle lobe also modifies the standard triangle and the apex of the lower lobe may present quite characteristic shadows The evidence in favour of a central pneumonia seems to be definitely established by studies of this character Pierret emphasises the benign nature of pneumonia in children, and so does Dr A M Gill[3] in a report from the children's department of the Middlesex Hospital on what he calls "simple pneumonitis" He describes the clinical picture of a child with a persistent cough of recent origin, loss of appetite and sometimes loss of weight The child is listless but at this period of the disease there is no fever Clinical examination shows slight impairment of percussion note over a limited area, with normal or weak vesicular breath sounds and fine rales of a persistent and "sticky" character X ray examination shows some mottled shadowing in the same area and within a week or two, irrespective of treatment all symptoms and signs disappear The child's general condition steadily improves and further radiography shows complete resolution of the pathological process Possibly such a child has passed through a lobar pneumonia of a mild type but Gill is inclined to think this unlikely He looks on the illness as the result of a low grade inflammatory process chiefly affecting the pulmonary alveoli.

A NEW HÆMOPOIETIC FACTOR?

EVIDENCE is accumulating which suggests that the effective hæmopoietic principle in liver is probably a combination of factors with somewhat different actions In a series of papers Jacobson and his colleagues[4] have shown that it is possible to isolate three chemical substances from liver which exert varying effects on hæmopoiesis in animals and man and which to obtain a maximum effect in man must be given together The complex nature of the liver principle is further emphasised though perhaps not clarified in an important paper by Dr Wills and her collaborators in our present issue Wills and Stewart[5] described in 1935 the experimental production of a megalocytic hyperchromic anæmia in monkeys which appeared to be closely allied to tropical megalocytic anæmia Monkeys with this type of anæmia were used in the present investigation, and it was found that it responded well to campolon (a relatively crude liver extract), whereas anahæmin (the purest available preparation) was inactive except in one instance Further it was possible to separate campolon into two fractions according to their solubility in saturated ammonium sulphate One of these, which was thought to contain anahæmin, was inactive in monkeys but curative in human pernicious anæmia, the other was active in monkeys Similar fractionation of yeast extracts also yielded two fractions the soluble one was effective in monkeys while the insoluble was not These observations suggest that the cause of nutritional megalocytic anæmia in the monkey—and probably of tropical megalocytic anæmia—cannot be a simple lack of Castle's extrinsic factor in the diet, as has been usually assumed Nor can the cause be a lack of active principle present in anahæmin, since anahæmin which cures pernicious anæmia does not cure monkey anæmia There seem rather to be at least two hæmopoietic principles in all these extracts (e g liver, autolysed yeast extracts and wheat germ) which are active—some only after incubation with normal gastric juice—both in nutritional megalocytic anæmia and in pernicious anæmia The crude extracts like campolon contain both principles, while the purer extracts like anahæmin contain only one The fact that one monkey reacted to anahæmin given after parenteral injection of the monkey fraction from yeast also suggests that this factor may be needed for normal hæmopoiesis in the monkey but usually the dominant deficiency in the experimental anæmia is of the other—at present unidentified—principle Wills thinks this may be allied to the vitamin B_2 fraction of the vitamin B_2 complex Chemically it appears more closely allied to the substance isolated by Cohn, McMeekin and Minot[6] from liver than to anahæmin or hæmopoietin. Observations on the effect of anahæmin on tropical megalocytic anæmia will throw more light on this complex but important hypothesis Theoretically anahæmin should be inactive in this condition.

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[1] *Echo méd Nord* 1936 6, 1061

[2] *Ibid* p 1077

[3] *Middlesex Hosp J* 1937 37 20

[4] Subbarow Y Jacobson B M and Prochownick V (1936) *J Amer chem Soc* 58 2234

[5] Wills L and Stewart A (1935) *Brit J exp Path* 16 444

THE SURGICAL RELIEF OF IMPOTENCE

IMPOTENCE is often due to flaccidity of the ischiocavernosus and bulbocavernosus muscles they become no longer capable of compressing the efferent vessels To counteract this flaccidity O S Lowsley and J L Bray[7] have devised an operation in which they expose the muscles through a perineal incision and tighten them with catgut sutures Since the muscles are so soft and delicate that sutures rapidly cut through them it is essential that ribbon gut be used Out of 51 patients operated upon 31 have been cured most of the failures being in men over sixty three Lowsley and Bray say that the muscles of men of advancing years are infiltrated with fat and that this may lead to failure of the operation The chief difficulty appears to lie in the selection of suitable patients The elimination of all cases of psychological impotence goes far to restrict the use of this otherwise valuable surgical procedure for in the opinion of many authorities some 80 per cent of cases belong to this class Nevertheless there are cases in which this new technique should be of great service According to the authors the most spectacular cures have been achieved in those who have been rendered impotent by perineal injuries due to operation or by rupture of the urethra by straddle injuries or other violence.

LIMITED QUARANTINE

FROM the beginning of this week most passenger ships bound for New York have been able to go straight to their piers and land passengers without calling at the quarantine station This has been made possible because the U S.A authorities have now put into force the plan drawn up six years ago by the International Health Office in Paris for an international code of signals (see Code vol. 2 Radio p 220) The New York Order of Jan 22nd grants to ships which carry a doctor the facilities envisaged in the plan for the wireless transmission of standard quarantine messages by ships shortly before their arrival in port From the passengers point of view the advantages of the new Order vary according to the class they are travelling Saloon and tourist class passengers are not normally inspected but they will save time Steerage passengers (and presumably the crew) will now be relieved of the march past the quarantine officer It should be noted that the new Order does not confer any rights on passengers it simply grants a privilege at the discretion of the quarantine authorities. A similar system has been in force in the principal British ports for some years and is working satisfactorily Its adoption in New York is a welcome advance since hitherto quarantine in the United States though applied in a fair and impartial manner has been rigorous Other countries will, it is hoped, take note of the relaxation and follow suit

CAMBRIDGE DEGREES

AT Cambridge the degree of M.B is withheld from medical graduates until they have written a thesis When a candidate passes his final examinations in medicine and surgery he receives only the degree of bachelor of surgery and though this is a registrable qualification entitling its possessor to practise medicine surgery and midwifery the fact remains that the official abbreviation *B Chir* conveys little or nothing to the public Thus the Cambridge man is under a disability compared with graduates of other universities until he has found time and opportunity to write an M.B thesis The task is a forbidding one for he is (or was) warned that great weight will be given to evidence of independent observation and reflexion The thesis, he was further told, is an integral and highly important part of the exercises *required for graduation* but in a report issued last week the faculty board of medicine announced that they have decided to recommend its abolition The grounds for this decision are that the theses actually submitted seldom contain anything very valuable that their composition interferes with hospital work and that their assessment imposes an excessive burden on the regius professor of physic who now has much else to occupy him It is proposed therefore that in future the two degrees of M B and B Chir shall be taken simultaneously after passing the final examination and that present holders of the B Chir shall be allowed to proceed to the M B without further test The welcome this news should receive from those it affects will be tempered by an associated suggestion that a higher standard be demanded of candidates presenting theses for the degree of M D

THE CONSEQUENCES OF PHILOSOPHY

THE ordinary man finds it hard to live and breathe in the tenuous atmosphere of pure philosophy To him (and in this he is perhaps basically sound) philosophy is argument, not solution and his interest in the argument is largely determined by his interest in the arguers It is something of a paradox that explorers in the most abstract regions of human thought should be ranked not according to problems they have solved but according to the manner in which they have set about solving them How well Plato realised the personal and dramatic element in philosophy is shown by his choice of the mime as his model for philosophical presentation. When we read in a little book[8] that it is an answer to Planck and Einstein our interest is at once aroused Here is the set for the perennial comedy of the little man and the big man—Eiron and Alazon David and Goliath Socrates and his accusers in Plato the accusers and Socrates in Aristophanes Sancho Panza and Don Quixote my Uncle Toby and my Father Shandy Laurel and Hardy—in this guise has each man in his degree learned wisdom Can the little man make the big man look foolish? If so it is good philosophy and good comedy When the author adds as an afterthought to his title that he is making "a philosophical attempt to mediate between the positivists and the supporters of the metaphysical hypothesis," we but chuckle the more He is like the comedian making irrelevant apologies for his own ridiculous appearance It is thwackings we want not mediation, to mediate is to spoil the sport In point of fact Mr Mundlak gives us a couple of hours good entertainment with himself as Eiron, and such portentous performers as Planck, Einstein, Eddington, and Jeans as alazons There are some nimble mental acrobatics and enough of the thwackings to hold our interest The big man is not allowed to get away with it that the tensor calculus and quantum mechanics makes him any wiser, in the Socratic sense, than the little man, and to see the dénouement of this satisfying little plot, whether it be in a book of philosophy or in a picture house, is always worth the moderate price charged for admission

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[6] Cohn E. J., McMeekin T. L., and Minot G. R. (193) Trans. Ass. Amer. Phys. 45 343

[7] J. Amer. med. Ass. 1936 107 20 9

[8] The Consequences of Philosophy. A Reply to Planck and Einstein. By Ian Mondell. London: [illegible] Daniel Son. 1936. Pp. 84. 3s 6d

FLOODS IN THE OHIO BASIN

During the past month floods have caused much inconvenience in parts of Britain and other European countries, but the inundation of an area, comparable to that of Great Britain, in the vast system of rivers which normally finds an outlet into the Gulf of Mexico at New Orleans is a calamity rather than an inconvenience It is reported that 400 people have died, 800,000 homes have been flooded, more than 500,000 people are still homeless and more than 250,000 are marooned in their homes or other refuges—and still the flood is spreading Influenza, pneumonia, typhoid, and even small pox are rife In one town alone over 200,000 have been inoculated against typhoid and the U S Army has taken over the task of removing the population from threatened areas It does not need a vivid imagination to picture the terror and anguish caused by the disaster in the whole valley of the Mississippi and its tributaries, the full effects of which will only become evident when the water recedes leaving slime, filth, corpses, carcasses of animals, relics of homes, with no doubt fresh outbreaks of disease The sympathy of the world will go out to the United States in these appalling conditions

How is such a disaster caused? Why is the greatest river system in the world unable to deal with its waters? Readers of Mark Twain will realise that the Mississippi although a very large river is a very variable one, and the same is true in degree of its tributaries All these rivers bring down vast quantities of silt which, in warm weather, when the flow is slow and the viscosity of the water is low falls out of suspension and causes mud banks, which are continually shifting as flow varies, but cannot shift quickly enough to let a sudden increase in flow get away to the sea or to lower reaches, without causing considerable rises of river level. The banks are notoriously low, but in many places have been raised, either naturally by deposits of silt or artificially by construction of levees or river walls These protect large areas near the rivers from flooding during normal periods of heavy flow, but if they give way under water pressure or if the water rises over them only serve to increase the magnitude of the flood

The comparative mildness of the winter, so far, has led to precipitation of rain rather than snow, and this precipitation has been excessive—it is said that the rainfall in the Ohio Valley for a fortnight has been equal to a normal six months fall. This, instead of being retained in the hills and lowlands of the basin as snow, which, when melted by the increasing sunshine of spring, would normally flow into its natural channels at a steady rate, regulated by the rate of melting, has rapidly run into the rivers and streams The flow has been too rapid for the water to carry away enough silt to increase the capacity of the channels for the greater volume passing through them, so they have overflowed their banks, and where two streams unite the inadequacy of the channels becomes still more marked It is not easy to see what can be done to avoid a recurrence of disaster, since neither rainfall nor temperature can be regulated, and although from some points of view it is unwise to build cities or villages on the banks of rivers liable to flooding, yet the advantages of being on a navigable stream are great, and the sites are likely again to be occupied The construction of levees enables small floods to pass away without serious damage, but accentuates greater ones Probably the proper remedy is to maintain sufficient channels by dredging, but this is costly and would necessitate the formation of a Mississippi Conservancy Board and some interference with the liberty of various States If excessive flow cannot be prevented means must be taken to let the water get away After all the average rainfall of North America is rather less than that of Europe

HALLEY STEWART

The medical profession has good reason to be grateful to Sir Halley Stewart The trust fund which he founded "for research towards the Christian ideal in all social life," and which latterly reached a capital sum of £350,000, was construed so broadly as to include medical research Grants have been made from the Trust to research on tuberculosis cancer, and asthma, and to found a fellowship of £500 for three years tenable in the neurological research unit at Queen square It is understood that the Red House at Harpenden in which he lived is now to become a hospital Halley Stewart was the tenth of a family of fourteen children and lived a life of singular vitality, ended a few days after spending his 99th birthday in apparent good health His elder son is a member of the medical profession, and the name of the younger appears in this week's Honours List in recognition of social service in which he has carried on his father's ideal. Sir Malcolm Stewart was the first Commissioner for the Special Areas of England and Wales

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INDEX TO 'THE LANCET," VOL II, 1936

The Index and Title page to Vol II, 1936 which was completed with the issue of Dec 26th, is now in preparation A copy will be sent *gratis* to subscribers on receipt of a post card addressed to the Manager of The Lancet, 7, Adam street, Adelphi, W C 2 Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now

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Royal Society of Edinburgh—A David Anderson Berry gold medal, together with a sum of about £100 will be awarded in July, 1938, by this society for the best work recently produced on the nature of X rays in their therapeutical effect on human diseases A similar award will be made every three years Applications for the prize may be based on both published and unpublished work and should be accompanied by copies of relevant papers They should reach the general secretary of the society 22, George street, Edinburgh, 2 by June 1st, 1938

PRINCIPLES OF MEDICAL STATISTICS

VI —FURTHER PROBLEMS OF SAMPLING: PROPORTIONS

In the previous section the concept of the standard error was developed, and was illustrated by the calculation of the standard error of the mean In addition it was pointed out that every statistical value calculated from a sample must have its standard error—i.e may differ more or less from the real value in the universe that is being sampled For example the standard deviation or measure of the scatter of the observations will vary from sample to sample and its standard error will show how much variability this value is in fact likely to exhibit from one sample to another taken from the same universe In practical statistical work a value which is of particular importance owing to the frequency with which it has to be used is the *proportion* For example from a sample of patients with pneumonia we calculate the proportion who die Let us suppose that from past experience *covering a very large body of material* we know that the fatality rate of patients with pneumonia is let us say 20 per cent (the actual figure from the point of view of the development of the argument is immaterial) We take over a chosen period of time a randomly selected group of a hundred patients and treat them with serum Then presuming that our sample is a truly representative sample of all patients with pneumonia—e g in age and in severity—we should observe if serum treatment is valueless about 20 deaths (it may be noted that we are also presuming that there has been no secular change in the fatality rate from pneumonia) We may observe precisely 20 deaths or owing to the play of chance we may observe more or less than that number Suppose we observe only 10 deaths is that an event that is likely or unlikely to occur by chance with a sample of 100 patients? If such an event is quite likely to occur by chance then we must conclude that serum *may* be of value but so far as we have gone we must regard the evidence as insufficient and the case unproven. Before we can draw conclusions safely we must increase the size of our sample If on the other hand such an event is very unlikely to occur by chance we may reasonably conclude that serum is of value (that is of course having satisfied ourselves that our sample of patients is comparable with those observed in the past in all respects except that of serum treatment) Before we can answer the problem as to what is a likely or an unlikely event we must determine the standard error of a proportion—i e the variability of a proportion in samples of a given size taken from the same universe Presuming the treatment is of no help then the fatality rate we should observe on a very large sample is 20 per cent (or nearly that) How far is the rate likely to differ from that figure in samples of different size?

SAMPLE OF ONE

If our sample comprises only one patient the fatality rate may be either 0 or 100 per cent; if the patient dies the fatality rate is greater than that of past experience If the patient recovers this is obviously not very convincing evidence in favour of our treatment for according to past experience 4 out of 5 patients are likely to recover without our treatment (20 per cent or only 1 in 5 die)

SAMPLE OF TWO

If the sample is increased to two patients, three events become possible (i) both may recover (ii) 1 may recover and 1 may die (iii) both may die

On the basis of past experience we can calculate the probability of each of these events occurring (i) The chance that one may recover is 4/5 the chance that the other may recover is also 4/5 the chance that *both* will recover is the product of these two independent probabilities—i.e 4/5×4/5=16/25 (ii) The chance that one patient will recover is again 4/5 the chance that the other will die is 1/5; the chance that *both* these events will occur is therefore 4/5×1/5 but this value must be multiplied by 2 for the event can happen in two different ways—viz patient A may live and patient B die or patient A may die and patient B live The probability therefore of observing one recovery and one death is 2 (4/5×1/5)=8/25 (iii) Finally the probability of each patient dying is 1/5 and of both patients dying is 1/5×1/5=1/25 We can tabulate these values as follows

Event	Probability of event	Fatality rate per cent
Both patients recover	16/25 = 0·64	0
One patient recovers one dies	8/25 = 0·32	50
Both patients die	1/25 = 0·04	100
—	25/25 = 1·00	—

The total probability is 1 for there is no alternative to these three events Clearly the only event that suggests that our treatment is of value is the recovery of both patients when the fatality rate is 0 compared with the 20 per cent of past experience The death of one patient in a sample of two gives a fatality rate of 50 per cent. and of both patients one of 100 per cent both rates being worse than past experience But the more favourable event the recovery of both patients is obviously an event which is more likely than not to occur by chance; it may be expected to occur 64 times in 100 trials with 2 patients even if the treatment is ineffective Therefore with a single sample of 2 patients and a normal fatality rate of 20 per cent the chance that both will recover is large and if such a result is observed we cannot deduce from it that our special treatment is of value

SAMPLE OF THREE

If we increase the sample to three patients four events become possible (i) all 3 may recover (ii) 2 may recover and 1 die (iii) 1 may recover and 2 die (iv) all 3 may die

The probability of each event can be calculated as before (i) The chance of the recovery of all three patients is 4/5×4/5×4/5=64/125 (ii) The chance that two may recover and one die is 4/5×4/5×1/5 this must be multiplied by 3 for this event can happen in three different ways since any one of the three patients may be the one to die; this equals 48/125 (iii) The chance that one may recover and two may die is 4/5×1/5×1/5 also multiplied by 3 for this event can also happen in three ways this equals 12/125 (iv) Finally the chance that all three may die is 1/5×1/5×1/5 an event which can happen *only in one way, and equals 1/125* Tabulating we have

Event	Probability of event	Fatality rate per cent
Three recover	64/125 = 0 512	0
Two recover one dies	48/125 = 0 384	33 3
One recovers two die	12/125 = 0 096	66 7
Three die	1/125 = 0 008	100 0
—	125/125 = 1 000	—

The only event that favours our treatment is, again, the recovery of all the patients Any other event gives a higher fatality rate than that of past experience—viz , 20 per cent But the recovery of all 3 patients is an event which is quite likely to occur by chance , it may be expected to occur 51 times in 100 trials with 3 patients even if the treatment is ineffective With a single sample of 3 patients, therefore, the chance that they will all recover is large, and again we cannot deduce that our special treatment is of value

SAMPLE OF FOUR

If we increase the sample to four patients five events become possible, (i) all four may recover, (ii) three may recover and one die, (iii) two may recover and two die, (iv) one may recover and three die, (v) all four may die

What is the probability of each of these events on the basis of past experience ? (i) The chance that all four recover is $4/5 \times 4/5 \times 4/5 \times 4/5$, this event can happen in only one way, and the probability equals 256/625 (ii) The chance that three recover and one dies is $4/5 \times 4/5 \times 4/5 \times 1/5$, multiplied in this case by 4, for there are four different ways in which this event can happen , any one of the four patients can be the one to die The probability of this event is also, therefore, 256/625 (iii) The chance that two recover and two die is $4/5 \times 4/5 \times 1/5 \times 1/5$, multiplied in this case by 6, for there are six ways in which the event can happen For if the patients are named A, B, C, and D, the following events are possible

Recover	*Die*
AB	CD
AC	BD
AD	BC
BC	AD
BD	AC
CD	AB

The probability of this event is, therefore, 96/625 (iv) The chance that only one recovers and three die is $4/5 \times 1/5 \times 1/5 \times 1/5$, multiplied, as before, by 4 (for any one of the four may be the fortunate one to recover) , this equals 16/625 (v) Finally, the chance that all 4 will die is $1/5 \times 1/5 \times 1/5 \times 1/5 = 1/625$ Tabulating

Event	Probability of event	Fatality rate per cent
All four recover	256/625 = 0 4096	0
Three recover one dies	256 625 = 0 4096	25
Two recover two die	96/625 = 0 1536	50
One recovers three die	16 625 = 0·0256	75
All four die	1 625 = 0 0016	100
—	625/625 = 1·0000	—

Once more the recovery of all the patients is the only result which gives a fatality rate lower than that of past experience, but this, again, is an event quite likely to occur by chance , it may be expected to occur nearly 41 times in 100 trials with 4 patients even if the treatment is ineffective

SAMPLE OF TEN

We can with samples of any size calculate by these methods the probability of favourable results occurring merely by chance , as the sample increases in size, however, the calculations become progressively more laborious But clearly we need not calculate *all* the probabilities If, for example, we treat ten patients then the only results which are better than that of past experience are those which give no patients at all dying or only 1 patient dying—i e , fatality rates of 0 or 10 per cent If two of the ten patients die the fatality rate is normal according to past experience, 20 per cent , and if three or more die then it is higher than that of past experience The probability of all 10 patients recovering equals $(4/5 \times 4/5 \times 4/5 \times 4/5 \times 4/5 \times 4/5 \times 4/5 \times 4/5 \times 4/5 \times 4/5) = (4/5)^{10}$ = 0 1074 , the chance of 9 patients recovering and 1 dying $= \{(4/5)^9 \times (1/5)\} \times 10$ (for any one of the 10 may be the one to die) = 0 2684 Either of these events gives a result better than past experience, and the probability of observing by chance one or the other is the *sum* of the two probabilities, or 0 1074 + 0 2684 = 0 3758 In other words we should expect to get a better result than past experience nearly 38 times in 100 trials with 10 patients even if serum treatment were quite ineffective Obviously in a single sample of 10 patients a result better than that of past experience is still not an unlikely event to occur by chance, and from such an observation we cannot deduce that serum has reduced our fatality rate

SAMPLE OF A HUNDRED

If now we return to our original problem—namely, a sample of 100 patients of whom only 10 die—the probability we need is that with which this result *or a better one* might be expected to occur even if our treatment with serum were quite ineffective—so that we ought to have observed 20 deaths on the basis of past experience It is *possible* to calculate this by just the same means as were applied to smaller numbers Tabulating we have the results shown on the top of the opposite page

The sum of the probabilities will give the number of times we might expect to reach a result as favourable as the one we have observed, or even more favourable, merely as a result of chance This sum is 0 0057, and we may conclude that only 57 times in 10 000 trials with a hundred patients would such a result turn up merely by chance Such a result, therefore, suggests that our treatment favourably influenced the survival rate But this calculation is extremely heavy and some shorter method is in practice essential

THE GENERAL CASE

Let us return to the tabulation regarding two patients This shows, if we write it in percentage *form* that if we had 2 patients in each of 100 hospitals the fatality rate would (on the average) be 0 in 64 of these hospitals 50 per cent in 32 of the hospitals, and 100 per cent in 4 of them From these figures we can calculate the *mean* fatality rate in the 100 hospitals and the *standard deviation* of the frequency distribution round that mean The mean fatality rate is $(64 \times 0) + (32 \times 50) + (4 \times 100) - 100 = 20$ per cent and the standard deviation will be found, calculated by the ordinary methods, to be 28 3 A similar calculation

Event.	Probability of event	Fatality rate per cent.
All 100 recover	$(4/5)^{100}$ = 0·00000000020	0
99 recover 1 dies	$(4/5)^{99} \times (1/5) \times 100$ = 0·00000000 00	1
98 recover 2 die	$(4/5)^{98} \times (1/5)^{2} \times 4,950$ = 0·000000063	2
97 recover 3 die	$(4/5)^{97} \times (1/5)^{3} \times 161,700$ = 0·000000514	3
96 recover 4 die	$(4/5)^{96} \times (1/5)^{4} \times 3,921,225$ = 0·0000031	4
95 recover 5 die	$(4/5)^{95} \times (1/5)^{5} \times 75,287,520$ = 0·00001495	5
94 recover 6 die	$(4/5)^{94} \times (1/5)^{6} \times 1,192,052,400$ = 0·00005928	6
93 recover 7 die	$(4/5)^{93} \times (1/5)^{7} \times 16,007,560,800$ = 0·0001900	7
92 recover 8 die	$(4/5)^{92} \times (1/5)^{8} \times 186,087,894,300$ = 0·0005 81	8
91 recover 9 die	$(4/5)^{91} \times (1/5)^{9} \times 1,902,231,808,400$ = 0·001478	9
90 recover 10 die	$(4/5)^{90} \times (1/5)^{10} \times 17,310,309,456,440$ = 0·003363	10

These multipliers are the number of different ways in which the event could happen. Clearly there are 100 ways in which 1 could die and 99 survive; there are 4,950 ways in which 2 could die and 98 survive, and so on.

for three patients gives a mean fatality rate in the 100 hospitals of 20 per cent. and a standard deviation round it of 23·1; for four patients the mean is 20 per cent. and the standard deviation is also 20·0. The *mean* fatality rate in samples of each size—viz., 20 per cent.—is the value, it will be noted, that we expect to reach according to past experience; but in the individual sample we shall not necessarily observe this mean value, for round it there will be a variability in the fatality rate from sample to sample due to the play of chance measured by the standard deviation and decreasing as the size of the sample increases. If we could calculate this standard deviation *without* having to find the different probabilities for each event we should have a measure of the variability that will occur by chance in the fatality rate in samples of different sizes. This calculation is, in fact, very simply made. If on the basis of past experience we expect 20 per cent. of patients to die and 80 per cent. to recover then the standard deviation round that expected 20 per cent. will be in samples of 2 equal to the square root of $\frac{20\times80}{2}=28·3$, in samples of 3 equal to the square root of $\frac{20\times80}{3}=23·1$ and in samples of 4 equal to the square root of $\frac{20\times80}{4}=20·0$. These values are the same as those found above by the longer calculation. In more general terms the standard deviation or, as it is usually termed, the standard error of a percentage is $\sqrt{\frac{p\times q}{n}}$ where p is the percentage of individuals belonging to one category (e.g., alive), q is the percentage in the other category (e.g., dead) and n is the number of individuals in the sample. We can therefore readily find the standard error of the percentage—i.e., the variability it would show from sample to sample—in samples of 100 or more patients. With 100 patients the standard error is $\sqrt{\frac{20\times80}{100}}=4·0$. In other words on the basis of past experience we should expect 20 of the 100 patients to die but in different samples of that size we should not always observe that proportion dying; the proportions observed in samples of one hundred will be scattered round 20 with a standard deviation of 4. We know (as was shown with the standard error of the mean in the previous section) that there will be relatively very few samples in which the proportion actually observed will differ by more than twice the standard error from the mean expected value. For instance with 100 patients we expected 20 per cent. to die but as this percentage has in samples of this size a standard error of 4 we might by chance observe a value in a single sample as high as $20+2(4)=28$ or as low as $20-2(4)=12$. Actually we observed a value of 10 per cent. This is beyond the value that might, *according to our criterion*, be likely to arise by chance and, *other things being equal*, we may deduce that it *appears likely* that serum treatment lowered the fatality rate. The italicised words must be emphasised. It must be recognised that we are weighing probabilities, never, as is sometimes suggested by non-statistical authors of medico-statistical papers, reaching mathematical proof. A difference between the observed and expected values *may* be a "real" difference (in the sense that the treatment was effective) even though it is not twice the standard error, but the calculation shows that the hypothesis that the difference has occurred by chance is equally valid. If on the other hand the difference between the observed and expected values is, say, four times the standard error this does not "prove" that it is a "real" difference; it may still be the result of chance. But the calculation shows that the hypothesis that it is due to chance is unlikely to be true, for such a chance difference is a rare event. The advantage of the calculation is that the investigator is thus enabled critically to estimate the value of his own results; he may be prevented from wasting his time by erecting some elaborate superstructure of argument on a difference between two averages (or proportions) which is no greater than a difference that might well be obtained on drawing two random samples from one and the same record (C. U. Yule: Industrial Health Research Board Report No. 28, 1924, p. 6).

Finally, presuming that the difference recorded between the observed and expected values is more than would be expected from the play of chance, then we must consider carefully whether it is due to the factor we have in mind—e.g., serum—or to some other factor which differentiated our sample—e.g., age or severity of disease—from the general population of patients. Where, as Yule expresses it, "some particular interpretation is rather attractive the investigator must be the more on his guard."

For the sake of clarity the standard error of the proportion has been deduced on the basis of a figure known from past experience In actual practice such a figure is not often available or may be an unsatisfactory criterion of the expected level in the observed sample, owing to some secular change The more usual procedure is the comparison of two percentages recorded over the same period of time in an experimental and a control group The development of this test is discussed in the next section

Summary

A statistical value which is of particular importance from the frequency of its use, is the proportion, or percentage By simple means the standard error of this value can be calculated, that is the amount of variability it will show from sample to sample for samples of different sizes The relation of the difference between an expected percentage and an observed percentage to this standard error shows whether that difference is likely or unlikely to have arisen merely by chance As a convention we take twice the standard error as a criterion If the difference is more than twice the standard error it is said to be "significant"—i e, unlikely to have arisen by chance, if it is less than twice the standard error the difference is said to be "not significant"—i e, it may easily have arisen by chance The test always involves weighing probabilities, and can never amount to proof in the logical sense The test can give no information as to the *origin* of the difference beyond saying that chance is an unlikely explanation

A B H

SPECIAL ARTICLES

HEARING-AIDS

A REPORT TO THE MEDICAL RESEARCH COUNCIL

THE accurate investigation of deafness is a product of the recent advances in sound reproduction and recording which have followed telephone engineering and broadcasting The application of these to the alleviation of deafness is not a simple one, for individual deaf persons vary in the extent to which they are deaf to different pitches of the auditory range Dr and Mrs Ewing and Dr Littler,[1] who have prepared a report which has been published by the Medical Research Council, are pioneer advocates in this country of group hearing aids for classes of severely deaf children, and they show that these aids are safe to use and do not cause any deterioration in hearing

They open their report by summing up the problem to be considered as follows —

(1) How does the ear of a partially or severely deaf patient behave when stimulated by loud sounds and to what extent can speech be made intelligible to him by amplification ?

(2) What are the characteristics of the most efficient type or types of aid ?

(3) What tests will ensure that the patient may be effectively advised as to what, if any, type of aid is suitable to his individual needs ?

They emphasise the first of these three questions, since the deaf patient must be supplied with a portable instrument which will enable him to follow the speech of any speaker under conditions which are little, if at all, subject to his control and often most unsuitable for sound reproduction by any existing mechanical means It is known that no matter how short the duration of sound, there is an average upper limit of intensity at all audible frequencies for people with normal hearing Intensities beyond this upper limit cause discomfort or pain, and the limit is therefore sometimes called the threshold of feeling The area between this and the threshold of audibility is the auditory sensation area This area is restricted in the deaf patient in the sense that his defect prevents him from hearing a sound of intensities and often of frequencies which are audible to the normal ear No hearing aid can restore the capacity to respond to sound over the lost range A highly sensitive aid may amplify a whisper to such an extent that it rises above the raised threshold of audibility, but that part of the area for which he is deaf remains dead ground for all time The normal ear can respond effectively to sounds ranging from a whisper (something like 15–30 decibels) to that of speech so loud as to approach the threshold of feeling (130 decibels) Efficiency in the supply and use of hearing aids requires, in the first place, the measurement of the patient's threshold of minimum audibility for speech This is most conveniently expressed in terms of the standard intensities used to give levels of loudness for speech, music, and noise For example, a patient who is so deaf that his threshold of audibility for speech is 60 decibels above that of normal listeners cannot be expected to follow average *mezzo forte* conversation at a distance of three feet, for such conversation has an intensity value of approximately 55 decibels above the normal threshold of audibility A speech threshold 100 decibels above normal implies that there is little capacity to hear speech even uttered in a loud voice close to the ear Thus the measurement of the threshold of audibility for speech shows the extent to which the deafness interferes with the ability to follow speech, and it also indicates the degree of amplification needed to bring sounds of different levels of loudness within the patient's range of hearing

Speech is, of course, a mixed sound, but nevertheless the threshold of audibility for it can be reliably deduced from the threshold for pure tones, and these can be ascertained by means of a pure tone audiometer or beat-tone oscillator Generally the speech threshold is within 5–10 decibels of the lowest reading for pure tones Experiments were made both by air conduction and by bone conduction The subject was seated in a sound proof room and signalled to the operator in another room when he could hear the sound When speech was being tested, and not pure tone only, the speaker sat inside the sound proof room with his lips twelve inches from a microphone The word "bah" was used for pure hearing, and various single syllable words closely resembling each other, or meaningless double syllable words were used to test intelligibility Only two of the patients tested had sufficient acuity for average *mf* conversation at three feet For one of them *mf* conversation was 10 decibels quieter than a whisper would be to a normal ear He was the least deaf of the nine patients, but a course of lip reading lessons combined with the use of a high quality amplifier for lectures (he was a university student) caused a marked improvement in his examination results Two patients were so deaf as to be unable to hear any speech unless it was louder than an *ff* voice and less than three feet from the ear To them the noise in weaving sheds (00 decibels) for which normal subjects need ear defenders is very little above the threshold of audibility

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[1] A W G Ewing M A Ph D I R Ewing M Sc and T S Littler M Sc Ph D (Department of Education of the Deaf, Victoria University of Manchester) The Use of Hearing Aids Medical Research Council Special Report Series No 219 1937 Pp 40 9d

DANGERS AND VALUES OF HEARING AIDS

It is important to know whether patients suffering from aural lesions should listen to very loud sound Very large intensities are often necessary if they are to hear speech with a maximum degree of intelligibility U Yoshi has shown that excessive stimulation may cause degeneration of the cochlea and it is commonly believed that the noise in boiler works induces deafness In addition to the possibility of damage to the ear there is the fact that loud sound not physically injurious is often psychologically objectionable The degree of loudness physiologically undesirable is ascertainable by quantitative experiment the *sensation is not merely objectionable* but makes the withdrawal of the ear from the receiver a reflex and inevitable act. Auditory fatigue is experienced by normal subjects when they listen to pure tones at large intensities for two minutes or more but deaf subjects seem less susceptible than the normal to this form of fatigue The magnitude of the fatigue is related to the duration of the stimulus and as the loudest components in speech vowels never last longer than half a second the fatigue does not appear when the speech is amplified Daily use of a powerful hearing aid for a long time has not been followed by any change in auditory acuity

The authors of the report think it very desirable to devise a standardised test for intelligibility of amplified speech The most reliable test stimuli are standard lists of syllables numbers and familiar words can be recognised when very imperfectly heard Such a test has considerable diagnostic value for speech cannot at present be made fully intelligible by any known aid when deafness to high frequencies is associated with cochlear and nerve lesions Other partially and severely deaf patients can be enabled to hear speech with approximately 100 per cent intelligibility

It is possible to measure the effective amplification of various hearing aids; the most satisfactory results are yielded by those instruments which approach most nearly to uniform amplification over the frequency range 200 ~ to 8000 ~ Valve amplification is indispensable if this is to be attained. Non valve battery aids give some help to a number of patients but their usefulness is greatly limited by their low amplification and the undesirable character of their frequency response Most non valve aids reduce the intensity of sounds of high frequency and so can never compensate for severe deafness to upper tones Bone-conduction receivers show the same limitation and are not in their existing form an economical means of using the output of an amplifier All electrical aids present the problem of background noise but in varying degrees depending on the ratio of noise to sensitivity of the microphone and amplifier in use Background noise can be measured in decibels and the measurement shows whether any particular subject will hear it or not Tests on 158 adult patients attending a clinic during eighteen months showed that 01 could obtain a good deal of help from a portable valve aid 18 from non valve battery aid 2 from bone conduction battery aid, and 16 from speaking tubes only while 28 could get no help from any aid An aid is most effective in a quiet room with good acoustic qualities and when listening to clear speakers. Even when the most efficient type of aid available is used lip reading is essential if the deaf person is to suffer the minimum disability from his deafness.

THE DEAF CHILD

The authors have also made a prolonged study of deafness in children They tested 236 children attending a school for the deaf and found that no less than 140 of them could benefit educationally from hearing aids Of 27 children attending elementary schools or special schools for the mentally retarded and not making good progress 24 were found to be deaf in varying degrees and were of the type which could make good progress if they were referred to a school for the deaf Only 3 were actually mentally retarded It has been found impossible to make pure tone tests of pre school children owing to their lack of interest and inexperience in listening to meaningless sounds but a series of tests have been devised *in which the young child learns to play in* response to sounds These tests give reliable but non quantitative evidence of the degree of deafness and the type of ear training on which to base the development of speech Hearing aids for class teaching are in use in a number of schools for the deaf and a comparison has been made between classes which have received systematic teaching by combined hearing aid and lip reading and those without these facilities The comparison is even more satisfactory than had been anticipated It is essential in class teaching that the teacher should speak close into the microphone and therefore a class amplifier is better than individual aids used at a distance from the teacher The class amplifier is also an advantage in discussions and conversation classes The child is in a different position from the adult His development in speech and his educational progress depend on the acquisition of new ideas associated with a new language and faithful reproduction of the highest quality is therefore vital. Education and speech development normally advance together and the quality of the hearing aids for educational *purposes affects results to a very marked degree*

Dr and Mrs Ewing and Dr Littler conclude that the conditions under which hearing aids are supplied to the public should include (*a*) tests of the patient s response to pure tones of the speech range (*b*) a standardised articulation test of the patient s capacity to respond to amplified speech under controlled conditions (*c*) articulation tests with the instrument which it is proposed to supply to the patient for a period of trial (*d*) familiarity on the part of those responsible for the supply of aids with the physical characteristics of each type of instrument especially its frequency response and effective amplification

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MEDICINE AND THE LAW

Hire Purchase Research

If any medical practitioner has been persuaded to sign a contract with the Consolidated World Research Society Ltd. he may be interested in the experiences of one who decided to cancel his bargain This limited company offers an encyclopædia on the instalment system and like other sellers of similar publications, employs canvassers to commend its merits to potential buyers. The books are not the sole inducement. The purchaser who signs the contract obtains also certain additional privileges of advice in research. Exactly what these privileges may be is a question which seems to be left to the canvassers to answer. If the usual printed copy of the agreement is signed, the subscriber thereby requests delivery of "The Consolidated Encyclopædia, comprising ten volumes in de luxe artcraft binding." Simultaneously he asks that his name be enrolled as a subscriber to the following services: (a) perpetual illustrated quarterly extension service for a period of ten years, (b) binders for the quarterly extension service, and (c) registered membership of the Consolidated World Research Society Ltd. for ten years. For all this he agrees to pay something down forthwith, and specified further instalments at specified intervals until the amount reaches £19 10s. "which covers the total cost of all the benefits described above." Then comes a paragraph which stipulates that the contract is not subject to cancellation, and makes the purchaser declare "I have entered into this contract solely upon the terms and conditions herein contained and irrespective of any representations made to me by any of your representatives." This frank provision, which the subscriber has possibly not studied before signature, leaves the company's canvassers a free hand to promise every kind of advantage to the purchaser. In the circumstances it would be only natural if they were very promising salesmen. If our readers should ask what are the profitable features of "registered membership" of this limited company, we can find little guidance for them on the face of the printed document. There may well be something more explicit in the eloquence of the canvassers whose persuasiveness the contract so ruthlessly repudiates. If our information be correct, the verbal inducements include the promise of consultative facilities and the prospect that the subscriber, instead of having to wait many years to establish himself in his profession, will meet with accelerated recognition and will be brought into touch with prominent figures in the world of medical research and medical practice. These suggestions seem to gather some confirmation from a paragraph marked "Important" on the back of the printed contract. The paragraph is somewhat vaguely headed "Information for Service Department"; it could be argued that it does not commit the company to any legal undertaking. "Much," it says, "of the value of the extension service and advice privileges for which you have enrolled will come from the personal relation that will develop between us. So that our Research Staff may come to know you better, we suggest as time progresses, that you keep us posted regarding the subjects in which you are particularly interested." The privileges of membership, we repeat, so far as they depend upon the printed agreement, lack both definition and value. One, at least, of the medical subscribers has placed on record his experience of them. He signed the printed contract and paid a deposit of £1 10s., but, being dissatisfied with the representations made to him by the company's agent, he afterwards repudiated the agreement. The company issued a summons in the county court, claiming £18 as the balance due for purchase of the encyclopædia. The defendant doctor, having taken the advice of the Medical Defence Union, put in a defence on oath in which he gave his own version of the transaction as follows:

"I accepted the verbal offer of the representative of the plaintiffs that for a fee of £1 10s. down and ten subsequent yearly payments of £1 10s. each, the plaintiffs' society would answer any research questions by me up to a specified number per annum, and I made the first payment of £1 10s. to him accordingly.

"I discovered I had been fraudulently deceived and misled by the plaintiffs' representative, and applied to the plaintiffs for a return of the £1 10s. paid by me.

"Any contract set up by the plaintiffs as made by me to purchase any encyclopædia or other books was obtained by fraud and wilful misrepresentation by the plaintiffs' representatives."

It must have been an uncomfortable reply for the Consolidated World Research Society Ltd. to receive. No commercial undertaking can relish so whole hearted an allegation that its agents are obtaining business for it by fraud. The defendant doctor, however, was not given the opportunity to repeat his story in court. A few days before the date fixed for hearing, notice to discontinue the claim was filed on behalf of the society. If the society feels it has been unlucky in devising a system of enterprise which permits such allegations to be made, it will doubtless reconsider its method of doing business.

PARIS

(FROM OUR OWN CORRESPONDENT)

THE COMMERCIAL IRRADIATION OF FOODS

SOME rather unkind things were said at a recent meeting of the Academy of Medicine by Dr. E. Lesné about the so called irradiation of various foods by enterprising manufacturers who seem to have rushed in where scientists have been so many tender footed Agags. At the present time in France you may not only buy irradiated milk and flour over the counter, but also pastries, sugar, chocolates, and so forth, all supposed to have been pumped full of various vitamins. It was pointed out that these preparations are either inactive, in which case their usefulness is limited to the vendor, or they are active, in which case they may be potent for evil as well as for good, and ought, therefore, to be sold only on the prescription of a doctor. It seems that, as a rule, these preparations are in fact more or less irradiated, however little may be known of the dosage, the possible harm being anticipated from over dosage, and the loss of other properties, presumably beneficial, entailed in the processes of irradiation, for it was suggested that, with the increase of vitamin D, the irradiated substances may lose some or all of their vitamins B and C. The whole subject is, indeed, bristling with so many problems still unsolved that the Academy of Medicine adopted a resolution that foods artificially enriched with vitamin D must not be on sale except in a pharmacy, and then only on a medical prescription. Such preparations must not be sold until their freedom from toxic substances is established and they can be guaranteed not to be injurious to the consumer. A further stipulation was that the vitamin content of such preparations should be accurately gauged by biological tests made regularly in an approved laboratory. It remains to be seen how far the adoption of this resolution by the most important medical body in France will inhibit the activities of manufacturers straining at the leash in their efforts to give potentially suffering humanity the benefits of recent research with the minimum of delay and the maximum of faith.

A SUIT FOR NEGLIGENCE

Certain interesting sidelights on the responsibilities of doctors, nurses, and chemists were thrown by a recent lawsuit arising out of a death from tetanus Having run a rusty nail into her foot while walking in her garden in a suburb of Paris a woman of 40 sought the advice of a doctor who on the day of the accident prescribed an injection of antitetanus serum He instructed a so-called nurse to give this injection The husband took the prescription to a pharmacy where he was given by mistake a bottle of anti diphtheria serum. While she was about to give the injection the nurse noticed the mistake and while she hesitated the husband insisted Prick her for it will do her good all the same Though she saw the doctor next day the nurse omitted to mention this matter When five or six days later complications appeared, the doctor was summoned and found evidence of tetanus He was surprised at the impotence of the injection he had prescribed but no one informed him of the mistake that had been made An urgent prescription for antitetanus serum was sent to the same pharmacy where the same mistake was repeated this time four bottles of antidiphtheria serum being supplied This was too much for the nurse who insisted on these bottles being changed for others containing veritable antitetanus toxin Its injection was, however incapable of averting death eight days after the accident It transpired in the course of the legal proceedings that the vendor of the first supply of serum was not a fully qualified chemist he was not even a student in pharmacy The nurse also proved to be a housekeeper bereft of any nursing certificates or diplomas In the first instance the vendor of the first lot of serum was sentenced to six months in prison the pharmacist himself (it was he who had sold the second lot of serum) to four months the doctor to a small fine while the nurse was acquitted On appeal negligence was imputed to all concerned the nurse included. Though the terms of imprisonment were not imposed the publicity given to this case should prove salutary in many ways not least in the matter of the employment of undependable and untrained persons in responsible positions.

SELF ADVERTISEMENT IN AUTOBIOGRAPHY

A communiqué recently issued by the Federation des Syndicats Médicaux de la Seine is a perhaps praiseworthy attempt to bridle the enterprise of those of its members who from time to time are solicited for biographical sketches of themselves with or without photographs also of themselves The recipients of these solicitations are informed that the character of the publication in which their autobiographies will appear is strictly scientific but that the exigencies of printing &c necessitate the payment of a subscription For even in the world of science you must pay your way The unappreciative attitude of the Fédération with all necessary clarity gives its considered opinion that such autobiographical activity constitutes more or less disguised self advertisement is contrary to the rules of ethics and is justly condemned by the medical profession

IRELAND

(FROM OUR OWN CORRESPONDENT)

MEDICAL RESEARCH IN THE IRISH FREE STATE

THE scheme to establish and endow medical research in the Irish Free State appears at length to be nearly accomplished. It was announced last week that the certificate of incorporation of a Medical Research Council had been issued It is now more than two years since a draft scheme was submitted to the Minister for Local Government and Public Health for his approval by a representative committee which had been formed on the initiative of the Royal Academy of Medicine in Ireland In accepting the scheme with certain amendments, the Minister has also sanctioned as a temporary measure a grant of £10 000 per annum from the Sweepstake Funds Should the council justify its existence by successful activity it is hoped that in the future provision may be made for the establishment of a Research Institute Funds will for the present be devoted to giving scholarships at home and abroad and to grants for specific purposes The council is to consist of eight persons, the chairman to be appointed by the Minister and the other seven by the several universities and medical schools and the Royal Academy of Medicine The chairman's name has not yet been announced but the following have been nominated by the several bodies named University of Dublin Prof J W Bigger University College Dublin Prof Henry Moore University College Cork, Prof. J M O Donovan University College Galway Prof. J F Donegan Royal College of Physicians of Ireland Prof. T G Moorhead Royal College of Surgeons in Ireland Prof. W J E Jessop and Royal Academy of Medicine in Ireland Dr J W McGrath.

BOOKS FOR HOSPITALS

Some months ago the Minister for Local Government and Public Health had given his approval to a grant from Sweepstake Funds for the purpose of providing books for the reading of hospital patients A committee for the purpose has now been appointed by the Minister and the first meeting was held on Feb 2nd

TRINITY COLLEGE DUBLIN MEDICAL SCHOOL

There have been some changes in the anatomy department at Trinity College Dublin and the abolition of the separate dissecting room for women in the anatomy department removes a relic from the pioneer days of women medical students Since last term all have used a joint dissecting room and the vacated space has been converted into a reading room. Among the new appointments are those of Dr E D Adrian of Cambridge who will deliver the John Mallet Purser lectures this year and Dr I B Alabaster who has been appointed to the Mary Louisa Prentice lectureship in ophthalmology

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION —A special course for the primary F R C S examination will be given at the Infants Hospital on Mondays Wednesdays and Fridays at 5 15 P.M (physiology) and 6 30 P.M (anatomy from Feb 22nd to May 24th) An all-day course in medicine surgery and gynaecology will be given at the Royal Waterloo Hospital from Feb 22nd to March 6th A week-end course in children's diseases will be held at the Princess Elizabeth of York Hospital on Feb 20th and 21st M R C P courses will be held as follows: clinical and pathological course National Temperance Hospital (Tuesdays and Thursdays 8 P.M Feb 16th to March 4th); chest diseases Brompton Hospital (5 P.M twice weekly Feb 22nd to March 20th) heart and lung diseases Royal Chest Hospital (Mondays Wednesdays and Fridays at 8 P.M March 1st to 26th); neurology West End Hospital for Nervous Diseases (afternoons March 8th to 20th) An all-day course in proctology will be given at St Mark's Hospital (March 1st to 6th)

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month, his name can be seen later in the half-yearly index

FROM A ROVER

I

FREEDOM to indulge oneself in "unfettered thoughts" was too great a temptation to resist Here's "fun," I said to myself, using a word which we grown ups have borrowed from our children Anonymity for several months, too, and with a fair chance that any curiosity which may have been aroused at the moment the article was read will have died before the half yearly index appears And "tut, tut" was a sufficient answer to the kill joy spirit which held up the bogy of a supposition that some all too clever reader might divine, from internal evidence—either by the text or by the style (or lack of it)—who the writer really was "But that's fun, too, for some people," added the spirit of mischief, and the recollection that I had myself played this game with some, nay most, of the "Grains and Scruples" that had preceded these of mine—not being a cross word puzzle fan—egged me on rather than restrained me There's "A Chronicler," for example, whose name is now out, who else could have produced those four articles but the doyen of medical writers, he who might appropriately say in his defence, if charged with not coming within the category of "doctors in various occupations," what Iphicrates said when he was charged with not being any particular sort of soldier, "I am not indeed, I confess, but I am he who commands all of them and employ them as occasion serveth."

* * *

"A Chronicler" discusses the important question of educating the lay public on matters of health, and he has in mind, in particular, the medium of the lay press I want to unfetter a few thoughts on this subject

We may just as well face the basic facts, which seem to me to be these The average reader lusts to know things about diseases and remedies *when these concern himself* I agree that matters of epidemiology and statistics, and even the latest advances in bio chemistry or bacteriology, interest him much less But not only must the matter served up to him, if it is to be popular, have the news value incident upon its application to his own body, there must be news value in the personality of the man or woman who writes it This means that the identity of the writer shall be revealed, and here comes the conflict with the traditions of the profession in this country So long as these traditions remain—and most of us believe it to be in the public interest that they should remain—so long will the impasse last

* * *

The proprietor of a daily paper who recently approached a well known doctor on this matter, and who thought the veto upon signed articles dealing with health matters was "all my eye" was offered a series of articles by a panel of medical men who should be experts upon the various subjects dealt with He was told that he might preface the articles by publishing a list of the names on the panel, but that no individual article would be signed. Payments for the articles were to go to the Royal Medical Benevolent Fund His reply was that he would pay five guineas each for articles contributed on this basis and one hundred guineas for each article if it were signed *and if he might choose the writer*

A short time ago the B B C introduced into its programmes a series of talks upon health The various subjects with which the speakers dealt were all of them calculated to interest the man in the street The speakers were chosen by a high official at the Ministry of Health, but the names of the speakers were not published The name of the doctor who introduced the series, however, *was* published. It was presumed that he would not deal with any specific disease, and indeed the text of his talk was "vetted," no doubt with this embargo in mind.

* * *

They do this sort of thing very differently in America as, of course, they do many other things differently! In the U S A there is what is called "The Open Forum" In a large hall, filled with people, eminent medical men and women, themselves in active practice, descant upon diseases upon which they are recognised authorities The address is broadcast, and the "hook up" extends to several million hearers "The Open Forum" is organised by the State Medical Society, which is the equivalent of our B M.A.

* * *

A heap of difficulties present themselves in a full consideration of this controversy Cold anonymity creates no real interest in any article on a special subject and "our medical correspondent" may be the sub sub editor with a flair for pseudo medical knowledge or a newly fledged doctor bent on supplementing his—as yet—all too slender fees by turning an (?) honest penny in this way, in either case the title to real knowledge is suspect If we hand over this function to those who have the ability to write and who yet, being retired, cannot be said to be getting an advertisement out of the publication of their names the reader is quick to know that the writer is out of touch with live patients and so is prone to doubt if he is getting "the goods," and we know that his doubts, if not justified to day, will be justified to morrow

* * *

Again, this task cannot be left to a doctor *merely* because he writes well. Was it not of Goldsmith that Garrick said he "wrote like an angel and talked like poor poll"? A doctor may be a good publicist and a poor practitioner Indeed it has been said that in proportion as a medical man is a good publicist he is probably a bad doctor Least of all those to whom this business of health education can be entrusted is the obsessionist And we have such amongst us To one or two of these, "operating" in the past two decades, we no doubt owe the fact in part that the great majority of us have decided to leave the thing alone, lest worse harm befall the public than has befallen it already When "A Chronicler" tells us that "the remedies and adjustments for human defaults, physical and other cannot be standardised for individuals, since many factors having quite different values will be present," he is probably influenced a little by the appalling blunders committed in the name of health education by those who have laid down in the daily press universal rules and prescriptions regardless of *age* sex height, weight complexion *temperament* occupation and a *number* of other considerations There are tears for these things

Yet I cannot somehow think that our American friends are entirely wrong. I felt sure the diabetes specialist was wrong when he talked about acidosis to the general, even without *defining* the word and that this wasn t remedied by the known fact that his reputation was international. But I do feel that there is something that wants doing not by way of "medical advice for individual needs but by way of general knowledge about the human body about diseases and about the principles that underlie both preventive and curative Medicine

* * *

One of my chief reasons for thinking this is that I believe such information if given truly lucidly and attractively would be a valuable *set-off against* the credulity quackery and commercialism with which the public is saddled I would go so far as to say that if this one object were kept well in mind by the writers with complete frankness and with some courage a valuable social service might be rendered. But whether the newspapers would open their columns to matter which exposed the gigantic frauds now practised upon the ignorant public by the vendors of patent medicines patent foods and ' medical gadgets of divers kinds is another question The advertisement manager might well intervene. But we should at least know if the grievance made against us by sections of the lay press that we keep from their readers information and help which it is our duty to give them is genuine and sincere.

As it is, we see a host of new and fictitious diseases being constructed *the basis of all of* which is *none* other *than* the *cleverly concealed fact that* its your money we want Night starvation spring face starch heaviness

Fleet Street history still tells the story of a record coup made by an enterprising daily paper when three letters appearing on three successive days *in* the splash *page*, over names which carried weight *stopped* completely in 24 hours the enormous sale of a patent medicine which did *not* contain what it said it contained and *did* contain something that was not revealed. No one seriously supposed that the main purpose of the paper was to render a philanthropic service Yet this was undoubtedly done Surely the *time* is ripe *for* another coup ? I throw *out the* hint for all whom it may concern.

* * *

Coming back to the matter of the traditions of the profession in respect of advertising the salient point is clear and I hope, ineluctable a doctor must rely for his reputation upon the work he does in his own sphere be it general or consultant not upon mere publicity and the value of this work *must* be judged by his colleagues and by his own patients The sick person and his friends must not be put in such a position that they are influenced to consult him by reading his articles in the lay press or by seeing his photograph there It has been said that it is not possible nowadays *for a doctor to* have prestige without a certain amount of publicity whereas it is possible to have a lot of publicity without much prestige That is true and should be remembered in extenuation of some paragraphs in the lay pres concerning which the doctor is the victim and not the culprit In the *last analysis we are all of us either social or anti-social. The doctor is tempted to be* anti social almost every day of his life He may lower the standard if he likes but if he believes that the present canons of professional ethics are in the public interest he must come into line with them not only passively but by active resistance against attacks made against them

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PANEL AND CONTRACT PRACTICE

Understudying the Dentist

LAST year Dr X an insurance practitioner in London charged 10s to an insured person on his list who applied for his services late one night on account of bleeding from a tooth socket In July 1936 the London insurance committee ruled that the service rendered fell within the definition of the proper and necessary medical services which the practitioner is required by his terms of service to render The insurance committee therefore decided to deduct the 10s from the practitioner s remuneration and to refund it to the insured person

Dr X appealed against the decision in order to raise the general question of the scope of the terms of service in relation to dental work He contended that dental work was never meant to form part of insurance practitioners duties as covered by the capitation fee He cited the recognised allowance of extra payments for dental anæsthetics administered by insurance practitioners to patients on their lists The Ministry s circulars he believed gave no specific authority for this allowance The inference was that dental services were regarded as in a special category—like attendance at confinements The medical service subcommittee s report said Dr X seemed to make capital out of his admission that the service rendered by him was a medical service but of course any service rendered by a doctor was a medical service the administration of *dental* anæsthetics was a medical service and yet extra payment was allowed *for it* The patient who had suffered from the dental hæmorrhage had written that she would naturally have applied for treatment to her dentist but for the fact that the time was midnight This, said Dr X was an admission that she had merely made a convenience of the panel doctor Responsibility for hæmorrhage *following* dental extractions rested *primarily on the dentist* who performed the *operation.* Medical intervention in such cases might be regarded as an act of courtesy for which the dentist might feel inclined to render the payment or it might be deemed analogous to the now well-established routine adopted in emergency cases occurring on other doctors lists Dr X recalled a recent resolution passed by the London panel committee recommending a solution of the problem on these lines

The Minister of Health took the view that there should have been a formal reference to the local medical committee but invited the observation of the committee on the point In reply the committee relied on Clause 8 (1) of the terms of service defining the treatment which a practitioner is required to give to his patients such treatment comprises all proper and necessary medical services other than those involving the application of special skill and experience of a degree or kind which general practitioners as a class cannot reasonably be expected to possess Dr X, said the committee, had never contended that his service in arresting the dental hæmorrhage was not medical service or that it involved special skill and experience beyond that of general practitioners as a class The committee referred to the report of referees dated Sept 10th, 1915, which dealt with similar facts The report left no doubt that the arrest of hæmorrhage of the gums occurring seven hours after extraction was a medical service and one within the competence of the practitioner, the suggestion that it was the duty of the dentist to stop the bleeding was rejected as irrelevant, the failure in duty (if any) of one person was no excuse for the failure of another to perform his contract "The bleeding at 11 30 in the night was a matter calling for the medical treatment which the practitioner was bound to give, and his obligations were in no way affected by the origin of the bleeding"

The decision of the Minister on the appeal (which was determined summarily) was as follows The question whether the service rendered by Dr X was within the scope of the obligations under the terms of service was ruled to be a matter to be dealt with, in the first instance, by the local medical committee in accordance with Article 43 of the Medical Benefit Regulations in the circumstances, the findings and recommendation of the medical service subcommittee, and the decision of the insurance committee based on them, were held invalid. Dr X therefore succeeded in his appeal. In conveying this decision, the Minister pointed out that the allowance of the appeal did not imply any decision on the scope of the service rendered by Dr X. He gave no direction as to the costs of the appeal.

The result is inconclusive and unsatisfactory The insurance committee is now referring the matter to the local medical committee under Article 46 of the Medical Benefit Rgeulations of last year, to obtain a decision as to the range of medical service—namely, whether the service rendered by Dr X fell within the scope of his obligations or not Meanwhile the proceedings have at least had the advantage of focusing attention, as Dr X intended, on the relation of dental work to the medical practitioner's capitation fee

CORRESPONDENCE

REST HOUSES FOR RHEUMATOID ARTHRITIS

To the Editor of THE LANCET

SIR,—I have read with great interest the leading article in your last issue entitled "Rheumatoid Arthritis A Move On" It is time for a constructive national policy for the care and cure of those suffering from arthritis I would submit that, if treatment centres are to be set up near the homes of the cases and special hospital provision made, the medical orthopædist should be a member of the organisation This is not primarily for the purpose of dealing with the ordinary physical methods of treatment required, nor even for the prevention and cure of deformities It is in order that methods of physical treatment may be organised which will build up the bodily resistance of the cases, by establishing correct use posturally of the body as a whole Poor posture is almost always present in cases of chronic arthritis

The group of symptoms called "arthritis" can be understood better when we look at them from the viewpoint of the student of "body mechanics," and realise the local and general functional disturbance which habitual bad posture *can produce* Arthritis is not a disease of joints alone, but a widespread disorder of the whole body Whatever the factors at work, the poor posture and lowered tone are parts of a vicious circle which must be broken The atrophic form of arthritis is a degenerative disease much more common in women than in men It occurs between the ages of 20 and 40, and almost always in the slender anatomic type of person There is a profound failure of the body to do its work With these conditions present, infection ultimately takes place The background of inherited anatomic structure, prolonged visceroptosis, and poor posture result in progressive faulty function of the diaphragm, heart, lungs, and the misplaced abdominal viscera The infection comes later when resistance is broken down The longer the imbalance continues, the greater is the damage done

Improvement of the bodily resistance cannot occur without prolonged rest and reconstructive treatment by *skilled medical orthopædic care to* correct the faulty bodily posture, to allow every organ of the body to do its work to full capacity We must strive to obtain perfect and not imperfect use of the body in standing, sitting, walking, breathing, and in lying down Without this part of the work, diet, rest, warmth, relief from strain, and the removal of infection *cannot* be expected to maintain a cure. They only lift a temporary burden

The changes of arthritis can be prevented and checked if taken early and approached with these ætiological points in mind. I would submit that the medical orthopædic care of these cases is an art which is very little understood in this country The problems of disturbed physiology of the organs, viscera, and nervous system within the abdomen do not differ essentially from an internal derangement of such a relatively simple structure as a joint The same orthopædic principles, based upon a knowledge of anatomy and of right and wrong working conditions, apply equally to both. Arthritis is fundamentally an *orthopædic problem* in large measure. Physical resistance and bodily strength can be maintained or restored only by correct use and correct living

Who is not familiar with the case of atrophic arthritis in which the chest is flat, the diaphragmatic excursion is practically absent, and the abdominal organs "dropped"? In some of the cases, so bad is the bodily mechanics, that it is hardly possible to insert a finger at the subcostal angle, and when one does so, it comes down at once upon the spine, so empty are the subdiaphragmatic spaces With the loss of abdominal fat and the loss of the protection normally afforded by the properly positioned organs and viscera to the sympathetic nervous system in this situation, an inhibitory stretching results With the consequent depression of all the vital functions and poor tone, it is essential for successful treatment that the medical orthopædic care of the case should proceed along with the purely medical care Herein lies the main province of the orthopædist, to assist in the establishment of right use of the body wherever and however it may have gone wrong

I am, Sir yours faithfully

W A. COCHRANE

Edinburgh Feb 1st.

To the Editor of THE LANCET

SIR —I read with great interest your last week's leading article on the convalescent treatment of chronic arthritis in adults For some years we have been treating cases of Still's disease at the Children's Heart Hospital (belonging to the Invalid Children's Aid Association) at West Wickham Kent. The progress they have made in open-air country surroundings has been very satisfactory and a great contrast to their lack of improvement whilst in city hospitals. I think that Dr Fortescue Fox's suggestion should receive wide support but those who undertake the supervision of such convalescent homes should realise that more than a few months treatment will be necessary in many cases Moreover as Dr Fox has emphasised in his scheme facilities for physiotherapeutic treatment, skilled massage, and orthopædic measures to prevent contractures occurring will be a necessary part of each establishment

I am Sir yours faithfully

BERNARD SCHLESINGER.

Portland place W Feb 1st

To the Editor of THE LANCET

SIR —In your leading article last week occurs the statement Dr Fox himself attaches value to the use of pure sulphur waters in the treatment (of rheumatoid arthritis) and such waters are not available nearer than Wales Ireland or the north of Scotland Presumably the word pure indicates virtual absence of chlorides sulphates, &c implying that sulphide is the characteristic ion In this case the Harrogate springs such as the Harlow Beck with and Oakdale are as fittingly placed in that category as those in the districts mentioned. Neither by road nor rail can Harrogate be termed remote Although the strongly salinated waters founded Harrogate's reputation the diversity of springs due to the geological complexity of the underlying rocks has given to medical hydrology a great variety of media

I am Sir yours faithfully

A. WOODMANSEY

Harrogate Feb 1st

DERMATITIS AND MOTOR FUMES

To the Editor of THE LANCET

SIR,—Dr Whitfield's note on dermatitis from motor fumes is of interest and indicates an obscure external cause for some cases of eczema of face and neck In October 1930 I saw a lorry-driver with marked irritation and variable dermatitis of face and neck in which I suspected fumes as a possible cause As his work involved the loading of barley on to his lorry I patch tested him against petrol and barley He gave a strong positive reaction to petrol, a negative reaction being obtained in other control subjects who were tested. I have little doubt that this was the explanation of his dermatitis which has persisted since he has not been able to change his work I shall now try the effect of his driving with an open window in view of Dr Whitfield's suggestion

I am Sir yours faithfully

JOHN T INGRAM

Park square Leeds Feb 1st

INFLUENZA AND LEUCOPENIA

To the Editor of THE LANCET

SIR,—The recent research work on the ætiology of influenza and numerous letters and articles lately in the medical press relevant to the symptomatology and treatment of this disease prompt me to call attention to an article published fifteen years ago in your columns (*Lancet* 1922 1 116) by the late Dr F M. Gardner Medwin and myself. Influenza in its present and recent form in this country is far from being the fatal disease which we know that it can at times become it is very different now from the dreadful pandemic of 1918–19 but there can be no assurance that it may not yet again reassume the malignant form. A healthy dislike of anything suggesting commercialism and the pontifical utterances of many of our leading physicians have encouraged a non possumus attitude in regard to treatment We are told to fold our hands to rely on rest in bed warmth and nursing and to avoid any attempt to influence the course of the malady by any method of chemotherapy This is doubtless good advice in regard to the treatment of the vast majority of cases of the present type but I think it is to be regretted if it is to be applied invariably

In 1918 and 1919 working at the 17th General Hospital in Alexandria Gardner Medwin and I came to the conclusion that influenza was due to a filtrable virus; that this caused a leucopenia which was an index of the inhibition of reactionary defence by the body that the state of defencelessness thereby induced laid the host open to attack not only by the primary virus but by various germs—normally harmless but potentially pathogenic—which are commonly to be found in the throat and upper respiratory tract that prognosis depended on the number of circulating polymorphonuclear leucocytes (granulocytes) since the severity of the symptoms bore a direct relationship to the degree of leucopenia and recovery was always preceded and accompanied by a rise in the white blood count and that if one could provoke such a leucocytosis—e g by the injection of such a drug as sodium nucleinate the nucleotides not being known in those days—the disease was dramatically cut short and recovery ensued It is not suggested that the granulocytes per se are necessarily the only defence mechanism though I think that they are an integral part of it; and even then we inclined to the view that they were an index of the capacity of the host as a whole to respond to the infection by the production of antibodies against both virus and secondarily invading bacteria In other words we thought that the body itself could deal with the infection if only we could overcome the curious paralysing effect on its defence forces of the virus They offered the ingenious explanation that the virus had a negative chemotactic effect on the leucocytes and that the nucleinate acted as a chemotactic whistle" to call them out

In the beginning we adopted a system of control by dividing the whole series of cases into two The general treatment was the same in each but only those in alternate beds received the nucleinate After a little while we found such a striking difference in the mortality rate—those who received the nucleinate for the most part recovering and those who did not for the most part dying—that we did not feel justified in continuing to withhold it from the control cases The only criterion was the presence of a leucopenia; naturally in every case repeated blood counts were done to gauge the effect of the treatment We observed two phases of the epidemic *the first* in *the* hot weather from July to October—when such things as "colds" in Egypt are unknown—and the second in the cold weather from the end of November, 1918, onwards It is perhaps of significance that this period was marked by a degree of cold and wet which was most unusual for Egypt In the first phase, the virus was evidently neurotropic, the illness causing fever, severe headache, generalised neuritic pains, and in some cases symptoms resembling an acute encephalitis Lung complications were minimal, the disease was of short duration, although convalescence was marked by depression, and the mortality was practically nil. None of the people who contracted this influenza fell victims during the second phase, in which the onset of the disease was similar but was marked by the early onset of lung complications with an excessive mortality The production of a leucocytosis by sodium nucleinate—the earlier, of course, the better—seemed to have a specific effect in saving life, especially in the heliotrope cases

I should repeat that the drug appeared to have no effect unless a leucopenia was present, and unless it could provoke a leucocytosis It was useless in cases of non influenzal pneumonia where a leucocytosis was already present, and in the few cases under our care where there were, presumably, no leucocytes to call out owing to an aplastic condition of the hæmopoietic system Cases of established leucopenia due to pernicious anæmia or long continued severe malaria, for instance, showed no response Reasoning by analogy I have since tried the drug in a few cases of distemper in dogs and in the very fatal "influenza" of cats The results have been very encouraging, although, of course, I have not controlled these by blood counts and the number of cases treated is quite insufficient to allow of any definite conclusion being drawn from them One *word of warning Not all preparations of sodium* nucleinate provoke a leucocytosis in normal people, it follows that every batch must be tested on a volunteer (we always used ourselves) before reliance can be placed on it

I fully realise that in venturing thus to suggest that the physician treating influenza may possibly be able to do more than supervise the nursing I am laying myself open to that very criticism which has been so unsparingly poured forth in the English medical press of late, reinforced as it has been by all sorts of clichés which may be summed up in the phrase "Dépêchez vous de vous en servir de ce remède pendant qu'il guerit"

I am, Sir, yours faithfully,

Fleet Hants Jan 28th J GRAHAM WILLMORE

INTUBATION FOR PERFORATED GASTRIC ULCER

To the Editor of THE LANCET

SIR,—This method of dealing with perforated gastric ulcer, which was described in your issue of Jan 23rd by Dr Robert Leclercq, is certainly not a recent innovation My colleague, the late Mr W G Richardson of Newcastle on Tyne, practised this method many years ago and wrote a paper dealing with it (*Northumb Durh med J* 1907, p 215) At the time of publication he had carried out this plan in a good many cases and it was so satisfactory that he continued to employ it during the rest of his professional career

The title of his paper was "The Advantages of Temporary Gastrostomy in the Treatment of Ruptured Gastric and Duodenal Ulcer" This title perhaps suggests the formation of an independent gastrostomy, but, as a matter of fact, he actually passed the *catheter into the stomach through* the ruptured ulcer, and he was led to adopt that plan because of the very occasional difficulty of closing a perforation At the same time he was so convinced of the advantages of the catheter in the stomach that he sometimes *adopted* this method even when it would have been possible to close the ulcer by suture

Since my association with Mr Richardson I have occasionally used the method for the same reasons which induced him to originally adopt it But in quite a number of other instances I have made an independent gastrostomy even when it *was possible to* completely and safely close the perforation by suture I have especially used gastrostomy in long standing cases of perforations where there is infection of the upper small intestine area with distension and paresis of the upper coils, and also in cases in which the patient is suffering from dilated stomach as a result of marked pyloric stenosis, but in which it is not considered wise to carry out gastro enterostomy because of the accompanying peritonitis It is also valuable when the stomach is big and flabby

I referred to this matter in a Hunterian lecture which I delivered before the Hunterian Society in January, 1925 (*Lancet*, 1925, 1, 183) At that time I had operated for perforations on 147 occasions and I had employed a temporary gastrostomy 26 times Among these 26 patients the mortality was 30 per cent, which is exceedingly high, but they were all examples of either long standing perforation or of perforations complicated by the conditions which I have previously mentioned. In the series the average number of hours after perforation was no less than 17

I am satisfied that such a gastrostomy is sometimes a very great aid in dealing with these cases It acts as a safety valve The stomach can be irrigated without inconvenience to the patient, distension can be relieved by simply removing the catheter plug, and since overdistension of the stomach is always under control the patient may have the satisfaction of drinking much more freely than would otherwise be advisable

I am, Sir, yours faithfully,

G GREY TURNER.

Hammersmith Hospital L C C Ducane-road W, Feb 1st

APPENDICITIS AND ALARM REACTION

To the Editor of THE LANCET

SIR,—Some of the pathologic anatomical changes described by Dr Hans Selye[1] under the name "alarm reaction" as the result of non specific irritants, raise a strong suspicion of their pure vasomotor character, a possibility which is supported by older and more recent observations, apparently of the same order Amongst the older observations are those by Rossbach[2] and by Aufrecht[3] These demonstrated very clearly the *direct effect of cold on* distant parts of the body in the production of strong vasomotor reactions in trachea and lungs, showing themselves first in spastic anæmia followed by marked congestion, and even fibrinous and leucocytic exudates The gastro intestinal ulcerations, and the appendix lesions more particularly, of this alarm reaction are, as far as one may judge from the meagre anatomic histological details, of similar neurovascular order

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[1] Acute Phlegmonous Appendicitis produced by Intravenous Administration of Histamine *Lancet* 1936 2 1210

[2] *Berl Klin Wschr* 1882

[3] *Dtsch Arch Klin Med* 1916 119 270

In the gut these ulcerations resemble those multiple forms which appear in uræmia, metallic poisonings (mercury) and in infections These intestinal ulcerations are now generally accepted by pathological anatomists as the result of necroses from blood stasis in paralysed terminal vascular segments (infarcts)

Space does not permit further expositions but those interested may be referred to G Ricker[4] and E Kaufmann[5] As regards appendicitis on such a neurovascular basis Ricker's article on epityphlitis[6] is noteworthy He puts first in the appendix attack an abnormal irritation of its nervous system and also that infection arises secondarily on the basis of the exudative and necrotic primary neurovascular changes He regards the appendix lesion as the akron of a general splanchnic increased irritability A review of this matter may also be found in the section on appendicitis by Christeller and Mayer in the Henke Lubarsch Handbuch (vol. 104 p 530)

Finally an experimental study by E Reinhardt and Ricker[7] entitled a Critique of the Doctrine of Cellular and Humoral Stimulation of the Cutaneous Circulation devotes some attention to the histamine factor (the fashionable substance which at present seems to be brought into relation to all the ills the human kind may be subject to) and points out the scientific and epistemological weakness of such a purely biochemic explanation of living events

Perhaps your readers will be interested in obtaining these additional references

I am Sir yours faithfully

HORST OERTEL.

Pathological Institute McGill University Jan 20th.

A BILL TO SECURE MEDICAL PRIVILEGE

To the Editor of THE LANCET

SIR,—Having won an early place in the Ballot for Bills, I have been allotted a time next Friday Feb 5th to introduce a Bill and I am taking this opportunity of presenting a measure to secure privilege under certain conditions from disclosure of communications made to medical practitioners by their patients under the seal of confidence I append the text of the Bill as it is printed and as I propose to present it I may say that some of the clauses especially those relating to the prevention of crime or fraud have been drafted for me by Lord Atkin who has publicly stated his opinion that some measure of professional protection should be afforded to medical practitioners as it is to e g solicitors

In November 1927 I obtained under the Ten Minutes Rule a first reading for a Bill in essentially the same terms as my present Bill with the exception that in the earlier Bill I was advised by legal members in the House to limit the operation of the Bill to cases of venereal disease that limitation being suggested by the fact that patients attending venereal clinics under the ægis of the Ministry of Health are assured upon coming to the clinics by leaflet and personal promises that their confidences will be respected This protection was found to be illusory some short time before I brought forward the early Bill and several legal members of the House assured me at the time that they agreed with the Bill as it then stood indeed a number of eminent lawyers[8] gave the support of their names on the back of my Bill I did not proceed further with the early Bill as inquiries convinced me that even if the Bill passed the Commons the Lords, led by Lord Birkenhead would reject it. I believe there will be less opposition now from legal members of both Houses and this belief as well as another consideration have weighed with me in making my new Bill of wider application The drawback of limiting the Bill to venereal diseases is obvious, in that any person pleading its protection in a court of law would by implication be liable to the imputation that he was suffering from venereal disease

At the ninth International Congress of Dermatology held in Budapest in 1935 when I was president of one of the six committees appointed by the congress the purpose of my committee being the consideration of medical problems affecting public interests I chose as one of the subjects of my committee the discussion of the degree of protection awarded to the professional secret in those countries represented upon the committee which included members from nearly every State in Europe and from the United States It became obvious that the protection given to the professional secret abroad was much more efficient than in our own courts, and no miscarriage of justice from this protection was recorded by the various speakers That widely distributed experience should dispel any fears entertained by the lawyers in our country that the protection afforded by my Bill safeguarded as it is from improper use would be followed by untoward results.

I am Sir yours faithfully

House of Commons Feb 1st L GRAHAM LITTLE.

ENCLOSURE

Medical Practitioners
Communications Privilege 5th February 1937

A BILL

TO

Provide that certain communications between medical practitioners and their patients shall be privileged from disclosure in evidence

BE it enacted by the King's Most Excellent Majesty by and with the advice and consent of the Lords Spiritual and Temporal and Commons, in this present Parliament assembled and by the authority of the same as follows —

Privilege from disclosure in courts of law

1 Any information obtained by a duly registered medical practitioner in the course of treatment of any patient shall be regarded as confidential and shall be privileged from disclosure in a court of law :

Provided that the information obtained shall have been obtained for the purpose of a cure or assisting in a cure of a person so treated :

And provided also that this privilege (*a*) shall not extend to any communication made with the object of committing or aiding in committing any fraud or crime and (*b*) shall not extend to any disclosure in any court of law in any case founded on a criminal charge or charge of fraud against such patient

Definition.

2 For the purpose of this Act duly registered medical practitioner shall mean a person whose name is on the Medical Register

Short title

3 This Act may be cited as the Medical Practitioners Communications Privilege Act 1937

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[4] Relationspathologie Berlin 1924 pp. 118 and 119

[5] Lehrbuch der speziellen pathologischen Anatomie 1931 vol I p 716

[6] Dtsch Z Chir 19 7 202 1 5

[7] Virchows Arch 1933 288 391

[8] These were Sir Walter Greaves Lord, K C Mr now Sir F Boyd Merriman, K C Mr H Hopkin Morris Mr Goodman Roberts Mr R. Storry Deans K C

DYSOSTOSIS CRANIOFACIALIS

To the Editor of THE LANCET

SIR,—A case of craniofacial dysostosis is reported by Prof. A J Ballantyne in the January issue of the *Proceedings of the Royal Society of Medicine*. He suggests that the cause of this condition is quite unknown and although this is true I should like to draw attention to a theory which I published in the *Journal of Neurology and Psychopathology* (June, 1934). This theory was that the synostosis which is so evident and which is the apparent cause of the distortion is due to some condition which prevents the brain growing normally, and which inhibits various areas. If I may quote from my paper

> "It has been admitted since the failure of operative measures in microcephaly that the growth of the skull is dependent on the growth of the brain. In microcephaly the brain does not grow to the usual size and the skull shapes itself to conform to it. Again in porencephaly the skull is often flattened over the undeveloped half of the brain. It will therefore appear probable that any deformity of the skull is the result of cerebral disease and not of disease of the bones or sutures. For some unknown reason the fœtal brain does not develop at the normal rate and in normal directions. Possibly the brain even stops growing for a time. This uneven development allows the sutures to fuse where they are in contact"

This theory explains all these conditions of cranial deformity. In my paper I suggested that whether oxycephaly, hypertelorism, craniofacial dysostosis trigonocephaly, or any other member of the group is produced will depend on which part of the brain is sluggish in its growth. If it is mainly the frontal lobes which are affected, so that the coronal sutures are allowed to fuse, the brain will find itself forced to enlarge the skull upwards, producing oxycephaly. If the parietal lobes are at fault scaphocephaly is produced. Hypertelorism and cranio facial dysostosis appear dependent on disproportionate growth of the occipital, and possibly other lobes (this may explain the abrupt occiput in hypertelorism).

I agree that a general title is necessary but I would suggest that of cephalic dysostosis should be used (instead of the one suggested by Prof Ballantyne, which has so far been limited to Crouzon's disease).

I am, Sir, yours faithfully,

Harley street W, Jan 26th CLIFFORD ALLEN

RADIOGRAM AND RADIOGRAPH

To the Editor of THE LANCET

SIR,—Permit me to contribute the following additional observations in support of the noun *radiograph*.

Prof Oliver Lodge probably coined this word, for it was the name he gave to the photographs taken by the new Roentgen rays which he used to illustrate his paper at Liverpool on March 26th, 1896, and it is recorded in the *British Medical Journal* of April 4th, 1896. This association many of us would like to preserve for obvious reasons. I cannot find as early a reference to *radiogram*.

In your comment on my quoting *photograph* as precedent you state that this is really an unlucky exception to a convenient rule. There is more in my suggestion than similarity of the objects and their processing. Prof. Arthur Schuster, making the earliest British reference to Roentgen's discovery (*British Medical Journal*, Jan 18th, 1896) called the radiographs which Roentgen had sent him *photographs*, and in the same journal (Jan 25th) will be seen a radiograph of the hand with a note "It is a photograph of his own hand taken by means of the new radiation discovered by Professor Roentgen."

The terms *Roentgen photograph* and *X ray photograph* are still to day in use. The nouns *skiogram* and *shadograph* appeared in the *British Medical Journal* for Feb 22nd, 1896, and Sidney Rowland used the nouns *skiagram* and *skiagraph* in his serial articles there during March and April, 1896, but the term *skiascopy* was applied to the shadow test in refraction before Roentgen's discovery and to wrest it from its original setting does not appear praiseworthy.

Your comment, "Our preference for *radiogram* is based on the analogy of *telegraph* and *telegram* ... *telegram* was devised to signify what was written by the telegraph" Surely this lends support to the use of *radiogram* for the wireless message? But there are Greek scholars (see *British Journal of Radiology*, March, 1927, p 115) who say that "telegram is the vilest abomination ever popularised. It is an impossible compound. The true Greek form would be Telegraphene. A telegraph would be better ... Skiagram is an impossible compound violating every rule of Greek formations"

I have been at some pains to go through the contributions to the *British Journal of Radiology* for the past six years and the following is an analysis of the terms employed, each contribution having but one score —

Radiograph	181	X rays	6
Radiogram	56	X ray photograph	3
Skiagram	30	X ray pictures	6
Skiagraph	3		

One may say that the term *radiograph* is used exclusively for the photograph taken by X rays, and its continued use by a large section of the profession and the public is not likely to lead to any confusion, whereas, whether we like it or not, the term *radiogram* is now the household word for a radiogramophone and not likely to be supplanted.

I am, Sir, yours faithfully,

Birmingham 15 Feb 1st JAMES F BRAILSFORD

To the Editor of THE LANCET

SIR,—*Radiogram* and *radiograph* are both ill bred and bastard words, and it is difficult to know which to legitimise by official adoption as the term for an X ray picture. The mixed Latin and Greek parentage is avoided in the terms *skiagram* and *skiagraph*, but they are somewhat archaic in sound, as is pointed out in "Radiogrammarian's" letter (a pseudonym, be it noted, also with a bar sinister!), and strictly they mean *shadow picture*, the negative of *photograph* or *light picture*. It seems that although of blue blood, they are in the category of lost causes, and that the battle will rage round the first two words.

In the word *radiograph* the suffix *graph* may be regarded by some as derived from the Greek verb "graphein" to write, in which case *the* word becomes a verb, denoting the act of taking an X ray picture, a sense in which it is used by the majority of radiologists. On the other hand those who use *radiograph* as a substantive may claim that its suffix is then derived from the rare Greek noun "*graphē*," meaning a picture or painting. The objection to this is that "*graphē*" is never used in Greek in a compound word. An alternative derivation of *graph* in the substantive might be "*grapheia*," the Greek abstract noun, but this would be properly translated *graphy*.

Those who, like myself, use *radiogram* as the noun, are on safe ground in the respect that "*gramma*" (a letter, or thing written) is often employed in com pound words (cf. anagram, diagram epigram), and the objection to it lies only in its literal meaning —i.e a thing written by a ray In defence of this inaccuracy may I suggest that the important element in an X ray picture is not its pictorial effect or *graphē* ' but its message or *gramma* (pace those who do not read radiologists reports) and that the secondary meaning justifies its adoption as a noun in preference to *radiograph*.

Other advantages of *radiogram* are as Radio grammarian has pointed out euphonic and practical. It is somehow tidier to have different words for the noun and the verb Again do the advocates of *radiograph* propose to talk of *cholecystograph* or *pyelograph*? I confess they come awkwardly to the tongue

The piracy of the wireless and gramophone interests are to my mind a further incentive to hold fast to the word coined first in radiology As for *röntgenogram* or *röntgenograph* the sound of them is enough! I would almost as soon use *augeograph* or *radiopict* both of which at least have parents of the same stock.

Finally is *X ray* really spelt without a hyphen?

I am Sir yours faithfully

S COCHRANE SHANKS

Harley-street, W Feb 2nd.

NASAL SINUSITIS IN CHILDHOOD

To the Editor of THE LANCET

SIR —There is no doubt that chronic antral infection is often overlooked both in children and adults and there is not necessarily any fluid to be found in the infected antrum. In fact the dry antrum with the infected membrane is a greater cause of trouble than where there is fluid in it. Where a few antrum punctures and wash outs do not cure the infection an intranasal opening should be made so that daily lavage of the cavity can be done. If the antrum recovers frequently the other cells do also

I am Sir yours faithfully

C HAMBLEN THOMAS

Harley-street W Jan 30th

WHEN WAS JOHN HUNTER BORN?

To the Editor of THE LANCET

SIR,—The approaching anniversary of John Hunter s birth recalls the various dates that have been given by various people for that event. These number at least four

(1) July 14th 1 8 This is the date given by Sir Everard Home in his memoir of Hunter s Life prefaced to Hunter s treatise on the blood inflammation and gun shot wounds. In a copy of this work in the Royal College of Surgeons library is a marginal correction to February in William Clift s beautiful handwriting

I believe but have not the reference by me that Sir E Home himself subsequently corrected the error but without so far as I know explaining how he came to make the mistake It is surprising that so gross an error should have been made by one who was Hunter s resident pupil assistant locum tenens successor brother in law and executor under his will

(2) Feb 7th 1 28 This is a written entry on the fly leaf of a small bible presented to the Royal College of Surgeons by the late Miss Helen Baillie The entry records the marriage of Hunter s parents the years (and in some instances the dates) of the births and deaths of all their children John s death alone is wanting

(3) Feb 13th 1728 In the appendix to Dr Adams s memoir a letter to the author from the minister of East Kilbride is quoted It says that this date is that given in the baptismal register of the parish of East Kilbride and that he was baptised on March 30th It adds that Hunter s mother s name is entered as—Paul

Paul was the lady s unmarried surname Her Christian name was Agnes. It is plain that the informant did not know her Christian name and therefore was not Hunter s father

(4) Feb 14th 1728 Ottley in his Life prefaced to Palmer s edition of Hunter s works says that Hunter himself used to date his birth on this day which consequently is that on which his anniversary is celebrated at the College of Surgeons.

Hunter's evidence can only be hearsay despite the fact that he was a principal party and present on the occasion On the whole it seems most probable that he was born on the night of Feb 13th–14th 1728 about midnight and that the exact time was not observed by any of those present at the birth.

I am Sir yours faithfully

R. K HOWAT

Southampton-row London, W C. Feb 1st

B M.A AND T U C

SOME time ago Sir Walter Citrine secretary of the Trades Union Congress approached the council of the British Medical Association with a proposal for a working link between the trade-union movement and the medical profession and suggesting a standing joint committee to deal with subjects on which coöperation would be advisable The settlement of the dispute at Llanelly paved the way for some arrangement of this kind and the appointment of a joint committee has now been announced as follows

For the B.M A Sir E K Le Fleming (chairman of council) Sir Henry Brackenbury Dr H G Dain Prof R M F Picken Dr J W Bone Dr H W Pooler and Dr G C Anderson (medical secretary)

For the T U C Mr Ernest Bevin, Sir Walter Citrine Mr A Hayday M.P (chairman of the Social Insurance Committee) Mr W Kean (chairman of the Workmen s Compensation and Factories Committee) Dr A Welply and Dr F A Gregg (Medical Practitioners Union) and Dr H B Morgan (medical adviser to the T U C)

This joint committee will meet alternately at the house of the B M.A and the T U C the chairman to be drawn alternately from either side. The joint secretaries of the committee are Dr Charles Hill for the B.M.A and Mr J L. Smyth for the T U C

ROYAL EYE HOSPITAL, SOUTHWARK.—Sir John Simon was the principal guest at the Coronation dinner held in aid of this hospital on Jan 22nd when subscriptions amounting to nearly £2000 were received The hospital in 70 years has dealt with over a million patients and is the only London eye hospital south of the Thames though there are four on the north bank Over 000 cases of industrial eye injury were treated last year

NEUROSURGERY AT EDINBURGH ROYAL INFIRMARY.—At a recent meeting of the court of contributors to the Royal Infirmary of Edinburgh reference was made to the accommodation of fee paying patients in the neurosurgical ward The managers of the infirmary have not previously made any provision for fee-paying patients; but it was pointed out at the meeting that the circumstances are peculiar in that neurological surgeons require a special team of trained assistants and nurses and it is impracticable for the neurological surgeon to have one such team in the hospital and another outside in a nursing home Ward 20 is in the process of being reconstructed as a ward for neurosurgical patients who are at present scattered throughout the hospital

NEW YEAR HONOURS

THE delayed list issued on Monday contains the names of the following members of the medical and dental professions —

G C S I

H H the Maharaja of Gondal, G C I E, M.D, F R C P E, F R S E, LL D

K C V O

John Fraser, M C, F R C S E
Regius professor of clinical surgery in the University of Edinburgh

Knights Bachelor

Joseph Arthur Arkwright, F R C.P, F R S
Member of the Agricultural Research Council

John Charles Grant Ledingham, C M G, D Sc, F R C P, F R S
Director of the Lister Institute professor of bacteriology in the University of London

Ernest Kaye Le Fleming, M D
Chairman of the council of the British Medical Association

John Henry Morris Jones, M C, L R C P, J P
M P for Denbigh, Lord Commissioner of H M Treasury

C B (Military)

Major General T S Coates, O B E, M B, K H P
Deputy director of medical services, Aldershot Command

Major General A W M. Harvey, M B, K H S, I M S
Deputy director of medical services, Northern Command, India

C M G

William Henry Kauntze, M B E, M D
Director of medical services, Uganda Protectorate

C I E

Lieut Colonel R E Flowerdew, M.B, I M S
Inspector general of prisons Bengal

Graham Colville Ramsay, O B E, M.D
Deputy director of the Ross Institute (London School of Hygiene and Tropical Medicine)

C B E (Military)

Surgeon Captain W J Carr, M.R C S
Director of medical services, Royal Australian Navy

Surgeon Captain (D) Edward Ernest Fletcher, O B E, L D S, R N

C B E (Civil)

Percival Alfred Dingle, M R C S
Principal medical officer, North Borneo

O B.E (Military)

Lieut. Colonel G B Hanna, L R C P, I M.S
Officer commanding the Indian Military Hospital, Quetta, India

O B E (Civil)

George Moncrieff Barron, F R A C S
Member of the council of the New South Wales branch of the British Medical Association

Sydney Letts Dawkins, M.B
Medical officer, South Australian Railways

Lieut W S Empey, M.B, I M.S
Recently leader of the British Ambulance Unit No 1 in Ethiopia

Bernard Hart, L M S S.A
Consulting radiologist, Doncaster Royal Infirmary

Victor William Tighe McGusty, M B
Secretary for Indian affairs and inspecting medical officer, Fiji

William Egbert Thompson, M B
Surgeon specialist, Palestine

M B E (Civil)

Manikkam Durairaj David, F R C S E
Third surgeon, General Hospital, Rangoon, police surgeon, Rangoon

Kaisar-i-Hind Medal (Bar)

Louisa Helena Hart, M.D
Medical missionary, Chittoor district, Madras

Kaisar-i-Hind Medal

Lieut Colonel G M. Millar, O B E, M B, I M.S (retd.)
Director of medical services, Jammu and Kashmir State

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Comdrs M S Moore to *St Vincent* F St B Wickham, O B E, to *Victory* for R N B, and G S Rutherford to R N Hosp, Great Yarmouth

Surg Lt Comdr R B McVicker to be Surg Comdr

Surg Lt Comdrs E R P Williams and D F Walsh to *President* for course

Surg Lts J M Reese and S K Foster to be Surg Lt Comdrs

Surg Lt (D) J C Benson to be Surg Lt Comdr (D)

Surg Lts B M Goldsworthy to *St Vincent*, and E J Littledale to *President* for course

Mr A Eckford of Boston, Lincs, has been appointed Admiralty Surgeon and Agent for Boston, Mr J Ashforth of Doncaster for Doncaster, Mr A. MacQuarrie of Brightlingsea, for Brightlingsea, and Mr R A Walker of Peterborough for Peterborough

ROYAL NAVAL VOLUNTEER RESERVE

Surg Lt (D) L B Hilton to *Drake* for R N B

ROYAL ARMY MEDICAL CORPS

The undermentioned Capts to be Majs L H Hall, G A Walmsley, A Sachs, R T P Tweedy, T E Moles W R C Spicer, G T L Archer, and M R Burke

Short Service Commissions Lt (on prob) A F H Keatinge is restd to the estabt

TERRITORIAL ARMY

Lt Col E L Sandiland, T.D, vacates the appt of O C, 170th (Cavalry) Fd Amb, on completion of tenure

Lt Col E L Sandiland, T D, to be Bt Col

Maj D Stewart, T D, to be Lt Col and to comd 170th (Cav) Fd Amb

Lt H Weir to be Capt

J McG Rogan (late Cadet Lce Corpl Royal High Sch Contgt, Jun Div O T C) to be Lt

J C Lindsay to be Lt

ROYAL AIR FORCE

Wing Comdr W J G Walker to R A.F Station, Halton for duty as Senior Medical Officer

Squadron Leaders A Harvey to Directorate of Medical Services Air Ministry, for staff duties, B W Cross to Aircraft Depôt Hinaidi, Iraq for duty as Senior Medical Officer, Iraq Levies and Officer Commanding Levy Hosp Hinaidi L I Hyder to R.A.F Station, Heliopolis, Egypt, for duty as Medical Officer and F L White to Headquarters, Bomber Command Uxbridge, for duty as Medical Officer

Flight Lts J F Ziegler to R A F Station, Calshot D A Wilson to R.A.F Hosp, Cranwell, and E Donovan to R A F Station, Hemswell

Flying Offrs The undermentioned are posted to the Medical Training Depôt, Halton, on appointment to short service commissions W T Buckle D F Cameron H O B Howat J H Lewis J D Milne S Paul E S Sidney and J C Taylor

Dental Branch.—Flying Offr J H G Fensom to R.A.F Station Odiham

INDIAN MEDICAL SERVICE

Lt -Col. F W Hay retires

Maj N M P Dotivala to be Lt -Col.

Lts (on prob) to be Capts (on prob): V D Gordon B de Burca, D R Nicol, J Morgan G R C Palmer A. C Taylor J Revans T Sommerville and L M Kelly

DEATHS IN THE SERVICES

Colonel HAROLD HAY THORBURN C.I.E I.M.S whose death occurred on Jan. 27th at Peshawar N W.F.P was the second son of the late Mr J Hay Thorburn of Park Lodge Eltham Born in December 1882 he was educated at Edinburgh University qualifying M.B Ch.B in 1906 In September of that year he joined the I.M.S and was in military employ on the N W Frontier till April 1911 He then became civil surgeon to the Khyber Agency later at Peshawar and Wano In 1913 he was agency surgeon at Meshed Persia During the European war he was instrumental in raising and commanded Hazara levies to prevent armed parties of enemy emissaries entering Afghanistan from Persia He accompanied the column to Isfahan and Shiraz where he did single-handed the work of the H.Q office for several months until the arrival of seven staff officers In 1920 he was civil surgeon at Hazara and residency surgeon and C M O Baluchistan In 1924 he was legation surgeon at Kabul and after becoming lieut -colonel was appointed surgeon to the Viceroy of India in 1927 In June, 1917 he was created C.I.E and he was decorated by the King of Afghanistan.

(For New Year Honours in the Services consult the previous page)

OBITUARY

HENRY ALEXANDER OSBORN D.M Oxon

As we announced last week Dr Osborn died on Jan. 23rd from a hæmic infection contracted at a post-mortem examination He was pathologist at the Mill road Infirmary and other Liverpool hospitals

Graduating in arts at Natal University College in 1914 Osborn was awarded a Rhodes scholarship War service in East Africa intervened however until he was invalided out of the Army in 1917 with malaria On his recovery he proceeded to New College Oxford and in 1919 went on to King's College Hospital with a scholarship in pathology He qualified in 1921 graduated at Oxford in 1922 and took the D.P H During 1923 and 1924 he held a pathological appointment at King's College Hospital and from 1924 to 1932 he was pathologist in the Laboratories of Pathology and Public Health in Harley-street. During this period he became pathologist to King Edward Memorial Hospital, Ealing and consulting pathologist to Wembley Hospital. In 1932 he was appointed to the newly created post of pathologist to the southern group of municipal hospitals in Liverpool—Mill road Infirmary Smithdown road Hospital and Alder Hey Children's Hospital—with a total of 3000 hospital beds

He took up the task at a time of rapid development of these hospitals, shortly after they were taken over from the old guardians by the municipality It needed energy insight and powers of organisation for both clinical and pathological work was increasing at almost breakneck speed. Indeed, writes a medical friend those of us who were his clinical colleagues look back upon the past five years and wonder how he was able to encompass so much. For the routine clinical pathology of the hospitals was so smoothly and adequately done that it was not until after his death that we became fully aware of just how much personal attention he gave to it He had succeeded so well that we almost came to take his accomplishment for granted Moreover he found time and energy to carry out research on problems in the wards which forced themselves on the attention of an alert mind Troublesome outbreaks of pemphigus in the maternity department led to work on neonatal dermatitis for which he was awarded the D.M Oxon The admission of large numbers of patients suffering from pneumonia stimulated him to an intensive study of the disease in collaboration with clinicians and he was especially fascinated by what he used to term the ecological factors in prognosis—the importance of the soil and especially of undernutrition. Certain types of neonatal death also aroused his thoughtful curiosity and much occupied his mind in more recent months

Osborn was an ideal clinical pathologist spending his time between wards laboratory and post mortem room integrating pathology with clinical work to the advantage of patients and colleagues alike He was always ready and indeed eager for consultation at the bedside on a difficult or interesting case and he himself in turn was anxious always to have the clinician present at the many autopsies which he performed for a proper and equal interchange of facts and ideas He was a strong quiet and unruffled personality his accuracy of mind and attention to detail were qualities therefore which served him well, yet never got out of proportion. He talked slowly and deliberately he would listen in silence with a tolerant smile to intervene at last with some direct critical or thoughtful remark which was all the more effective for being so quietly uttered. There was no cynicism about him; he was kind practical and ready to say honestly and directly what he had to say

Among the memories of our collaboration in hospital there are two which recall Osborn to me as man and friend—the days when in the hospital common room he sat relaxing over a cup of tea puffing at his pipe, and discussing with his colleagues things medical or otherwise with flashes of an almost pawky humour; and the enthusiasm with which even in his laboratory at Liverpool he tried to initiate me into the joys of surf bathing in one of his beloved Cornwall coves

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RESEARCH IN DISEASES OF THE BLOOD.—The trustees of the Lady Tata memorial fund invite applications for grants and scholarships for research in diseases of the blood with special reference to leukæmia in the academic year beginning on Oct 1st Grants of variable amount are made for research expenses or to provide scientific assistants to senior workers Scholarships are awarded as personal remuneration and they ordinarily have the value of £400 per annum for whole time research with proportionate adjustment for work on a part time basis where this is approved The grants and scholarships are open to workers of any nationality Applications must be submitted before March 31st and the awards will be made by the trustees in June Further particulars and forms of application may be obtained by writing to the secretary of the scientific advisory committee 12B Bedford Court mansions London W C 1

PARLIAMENTARY INTELLIGENCE

FACTORIES BILL

In the House of Commons on Friday, Jan 29th, Sir **John Simon**, Home Secretary, introduced the Factories Bill, the purpose of which is to consolidate with amendments the Factory and Workshop Acts, 1901 to 1929, and other enactments relating to factories The Bill, which was read a first time, is not only a consolidating measure, it is a revising measure which will bring the provisions of the Factory Acts up to date The main changes proposed are as follows —

The various distinctions which exist in the present law between factories and workshops and between textile and non-textile factories are abolished, and only one term "factories" is employed

Part I, which deals with general provisions as to health, strengthens existing provisions and introduces new proposals The requirements as to cleanliness are made more precise The amount of cubic space required per person is increased from 250 cubic feet to 400 cubic feet, but in existing workrooms the old standard will continue to apply for five years and longer if effective mechanical ventilation is provided A reasonable temperature in all workrooms and a special standard of temperature for light sedentary work prescribed by the Secretary of State are to be maintained, and the Secretary of State will also have power to prohibit the use of unsuitable methods of heating Important new proposals are those for securing sufficient and suitable lighting and for medical supervision of the workers in certain circumstances—e g, in outbreaks of disease

In Part II the provisions of the existing law have been largely re cast New proposals provide for the adoption of various safety devices or arrangements, and impose duties on manufacturers in regard to the construction of new machines Precautions are required in the case of cranes, chains, steam receivers and containers, compressed air receivers, processes involving risk of explosion from dust or fumes, and various other matters Specific requirements are laid down with regard to hoists and lifts The provisions in regard to means of escape in case of fire, for giving warning and for familiarising employees with the routine to be followed, are considerably extended so as to cover all factories in which more than 20 persons are employed, or where explosive or highly inflammable materials are stored or used. Part III deals with general provisions as to welfare, especially drinking water, washing facilities, and accommodation for clothing and facilities for sitting for female workers Part IV contains important new proposals in regard to health, safety, and welfare these concern chiefly the removal of dust, the control of underground workrooms, and the lifting of excessive weights, giving power to make regulations prescribing maximum weights for young persons and men and women Part V reproduces substantially the existing law relating to the notification and investigation of industrial accidents and diseases Part VI deals with the hours of employment of women and young persons At present women and young persons may work in any week up to a maximum of 60 hours in non-textile (55½ in textile) works exclusive of intervals for meals and women may do a limited amount of overtime in certain trades Under this Bill working hours shall not exceed 48 weekly and 9 daily, exclusive of intervals for meals, an aggregate of 100 hours overtime in the year will be allowed for women and young persons over 16, but not more than 6 hours in any week or during more than 30 weeks in the year In trades subject to seasonal or other pressure however, women may be allowed to work 150 hours overtime and the other overtime requirements may also be released "in proper cases' Young persons under 16 will not be allowed to work overtime, and provision is also made for reducing the amount of overtime for those over 16 in any process in which overtime employment is shown to be prejudicial to their health. The same Part also provides for certain exceptions to meet certain special cases

Part VII following the existing Act applies certain provisions of the Act to docks, wharves, quays, and warehouses, it also applies certain provisions to certain processes carried on in ships in a harbour or wet dock which are not at present under the Act, to building operations which are only partly within the Act and to works of engineering construction which now come within the scope of the Act for the first time Parts VIII and IX re-enact the existing provisions in regard to homework and the supply of particulars to piece workers Part X continues with modifications a number of existing miscellaneous provisions, but contains one new provision imposing specific obligations on employed persons requiring them to use the appliances provided for their health or safety and not wilfully or without reasonable cause to do anything likely to endanger themselves or others Part XI contains the administrative provisions relating to the appointment, powers and duties of inspectors and the appointment and duties of examining surgeons (the new name for the certifying surgeon) Part XII re-enacts with modifications the provisions with regard to offences and penalties and legal proceedings Parts XIII and XIV deal with the application of the Act and general interpretation, and the definition of "factory"

It is proposed that the Bill shall come into force on July 1st, 1938, but the Secretary of State is given power to postpone, up to Jan. 1st, 1940, the operation of any particular provision in Part II This would enable special treatment to be given if necessary to any depressed industry which might find it specially difficult to comply with the provisions in question.

MATERNITY SERVICES IN SCOTLAND

In the House of Commons on Jan 28th Mr **Elliot**, Secretary of State for Scotland, moved the second reading of the Maternity Services (Scotland) Bill. In 1935, he said, a report was issued on maternal morbidity and mortality in Scotland by a specially appointed and highly competent technical subcommittee of the Advisory Committee of the Department of Health for Scotland, who were convinced of the urgent need for improvement in the standard of midwifery in Scotland This Bill closely followed the recommendations of this report Its object was to improve the standard of domiciliary midwifery by securing adequate nursing and medical services for women confined in their own homes A death rate of six mothers for every 1000 children born in Scotland indicated a degree of ill health which could not properly be measured, and some of these lives could be saved and much ill-health prevented by properly coördinated arrangements for attending to the health of women before, during, and after confinement in their own homes The Bill differed from the one in England because of the different conditions in Scotland where the doctor played a larger part and the midwife a correspondingly smaller part in the confinement Every expectant mother confined in her own home would be entitled to the services not only of a midwife but also of a doctor and if necessary an obstetrician of recognised standing These would work together as a team under the general administration and guidance of the medical officer of health Since the Scottish practice was for the confinement to be attended by a doctor it was hoped that with the arrangements of the midwife service and the advice of highly qualified specialists at call the doctor would not be required to go beyond minor assistance in the confinement, which was a natural event which he should supervise and guide if necessary but in which the patient was certainly going to play by far the major part

ORGANISATION AND FINANCE

The arrangements that the local authorities would require to make for providing this service Mr Elliot went on would be subject to the approval of the Department of Health but there would of course be some elasticity because such areas as the Highlands and Islands had difficulties in communications which would have to be taken into account It would be open to the local authorities to negotiate with the voluntary associations that employed midwives to arrange directly with those engaged on private work or themselves to establish a salaried service Before submitting the proposals to the Department, however they were required to consult the local voluntary associations and any organisation that had a right to speak for the midwives It was inevitable that when the scheme came into full operation the handy woman would disappear He thought the number of midwives in practice would be reduced by the provisions for compensation on retirement Moreover the midwives would be paid either by the local authorities who engaged them or by their own associations and would no longer have the not uncommon experience of rendering services without fee midwives had thus brighter prospects of a reasonable livelihood than they had had before If a midwife gave up a certificate within three years after the Bill had been passed she would receive as a compensation three years average income If others practised after they had really become unfit they could be called upon to surrender their certificate with the right of appeal to the Department and they would receive five times their average yearly income for the previous three years

The local authorities would be free to select their own methods for securing the medical services so long as these were adequate In some areas the arrangement would be with all the local medical practitioners willing to undertake the service In others the antenatal and postnatal examinations might be carried out at the authorities clinics and arrangements might be made with all the practitioners, or with a limited number the doctor attending being advised of the results of the examinations The service under the Bill was not compulsory but it was expected to be taken advantage of generally

Fees would be graded according to the patient s means and none would be charged to necessitous mothers For insured women the wives of insured men and women in a similar economic position it was hoped that local authorities would be able to provide a complete range of services at home at a fee not much, if at all higher than was at present payable for the services of a midwife alone Women could thus authorise payment to the local authority out of their maternity benefit Payment of practitioners would be in accordance with scales fixed after consultation with the appropriate doctors organisations When the new services were in full operation the additional expenditure after taking into account the fees recovered might reach £120 000 per annum The Bill proposed a grant equivalent approximately to half the total additional expenditure entailed on the local authorities but scaled in proportion to the need of the area He hoped that the proposal he made would seem reasonable to the local authorities He would be prepared to move an amendment providing that the Bill should not come into operation until May 16th which was the day after the new block grants had begun to run The local authorities would also receive Exchequer help to the extent of half their liability for compensating midwives who retired during the three years after the Bill took effect The universities and teaching institutions were concerned about the facilities available for the training of medical students and midwives but provision was included in the Bill that the local authorities and the Department in exercising their functions would have to maintain the facilities for teaching

MEMBERS COMMENTS

Mr JOHNSTON said that Mr Elliot had not explained why the maternal mortality rate in Scotland was 15 per cent worse than that in England nor why in a model area in London instead of a death rate of 6 per 1000 as in Scotland it had been reduced to 0 08 Nevertheless the Labour Opposition welcomed this measure for it was laying the foundations of a new municipal service in midwifery He was prepared however to have not only municipal midwives but also a complete medical service with doctors and midwives in the employment of the local authority Unless some provision was made for home helps women were not likely to accept readily the offer to go into lying in hospitals He asked what provision was to be made for seeing that women were given the nutrition necessary to a mother in child bearing

Sir ARCHIBALD SINCLAIR asked the Secretary of State for Scotland to explain why this scheme was going to cost so much less than that outlined in the report of the Committee on Scottish Health Services the total cost of which was to be £310 000 He suggested that if mothers were subjected to pressure from the local authorities in the payment of their maternity benefit they would be reluctant to avail themselves of the provisions of the Bill It might be wise if only half of the benefit could be transferred to the local authority if the mother authorised that to be done The Highlands and Islands attached very great importance to the recommendation of the Committee on Scottish Health Services that a special supplementary additional grant of £50 000 a year should be made available for the improvement of local authority health services in those areas Unless some such provision was made or unless the new formula for the block grant turned out to be fully as generous as Mr Elliot indicated he was afraid that this Bill would remain a dead letter in the Highland counties.

Mr GRAHAM KERR said he had been assured that unless the Bill was amended in one particular respect it would bring about actual deterioration in the domiciliary midwifery of Scotland For all midwifery cases to be treated in hospital was not yet a matter of practical politics and there was no convincing evidence that it would be an advantage in the present state of knowledge The overwhelming majority of cases to-day were attended at home and it seemed to him as a biologist that no more difficult task faced society than the improvement of domiciliary midwifery to the very highest level To ensure the most efficient training possible in midwifery for the midwife on the one hand and the medical practitioner on the other transcended all else in importance He had had representations from the Scottish universities and from the great maternity hospitals in Scotland not only that the present Bill failed to ensure this, but that the omission would in the long run defeat the whole object of the Bill that it might in its present form wreck the outdoor or domiciliary service of the hospital which is absolutely essential for the training of students and midwives ; and that the number of properly qualified midwives would inevitably decrease or alternatively the standard of their training would be bound to suffer He hoped that the Government would add a clause that in every area where there is a recognised medical school the local authority should ensure that adequate facilities are made available for the practical domiciliary instruction in midwifery of any person undergoing training with a view to becoming a duly qualified medical practitioner or a certified midwife

Mr LEONARD suggested that since many general practitioners did not like to indulge in this work a panel of practitioners who had given special attention to the subject should be consulted He also asked that the same restrictions should be placed on all unqualified attendants whether in maternity homes or in private —Mr ALLAN CHAPMAN said that it was clear that extern training was at least as important as intern training in view of the main object of the Bill He desired to see mothers protected by requiring a certificated midwife always to be present when a student was handling a case, no exceptions being made

THE MEDICAL PROFESSION'S VIEW

Sir **Ernest Graham-Little** said there was a very considerable danger in regarding this measure as a real contribution to solving a problem that was undoubtedly distressing and disturbing the medical profession more than any other Any progress to be made would be through the antenatal period, but most of the provisions of this Bill dealt with intranatal measures, which were too late, all the valuable time having been lost The nutrition of the expectant mother was undoubtedly one of the most important helps to a successful confinement He instanced the maternal mortality in the Island of Lewis which was less than that in Paddington, the suggested reasons being the very small community there and the excellent fresh diet Other dangers that only a medical man could discover during the antenatal period were the physical disabilities sometimes requiring Cæsarean section, cardiac pulmonary disease such as tuberculosis, and the most important of all, venereal disease Sir Ernest supported the plea for more maternity beds, for he said the mortality in well-conducted maternity homes had been very much less than in confinements in the best circumstances at the homes of patients Valuable experiments could only be made under very skilled observation, and at Queen Charlotte's Hospital, for example, a new drug had been tried for sepsis with the result that the mortality had decreased from 22 per cent to 2 per cent Another point was that in the Bill the general medical practitioner was rather left out of the scheme The colleges and universities, after the General Medical Council had sent out a circular pointing out the enormous importance of students obtaining more practical skill in London and elsewhere, had made some great changes in the medical curriculum to meet this need If the part played by the general practitioners was curtailed, it would decrease the urge for improving their education The report of the Committee on Maternal Morbidity and Mortality in Scotland, which he could not commend too highly, indicated certain dangers due to inexperience, of which an important example was a relatively ill-equipped midwife offering to do too much, and nothing was more disastrous at a confinement Antenatal care lessened the need to interfere, for it forestalled danger He would rather spend far more money upon these preparatory measures than on the actual operation of delivery itself, which should be, but very often was not, a really normal physical process It was from the point of view of giving a false idea of security that he thought this Bill would be somewhat of a disappointment to the medical profession

THE GOVERNMENT'S REPLY

After further debate Mr T M **Cooper**, Lord Advocate, replying for the Government, said that the Bill was not concerned with institutional treatment, because that was covered by other measures The authorities were blind neither to the necessity of pursuing the attack on the problem by means of institutional treatment, nor to the advantages to be secured from better nutrition for pregnant and nursing women The present Bill's limited purpose was to provide adequate domiciliary midwifery service Accounting for the discrepancy between the estimated expenditure of £120,000 per annum and the £310,000 in the report of the Committee on *Scottish Health Services*, he said the latter figure included a considerable sum for expenditure that was not included under this Bill, while the £120,000 did not take into account the payments which would be made for the services rendered If it was thought that the Bill could not secure adequate facilities for teaching midwifery the Secretary of State for Scotland and himself would be happy to examine any other formula which would achieve that object The continued supply of competent midwives and doctors was an integral part of the scheme, and they must so adapt their legislation and administration as to enable this to be done On the proposal to exempt from penalty various categories of persons, he said there was all the difference in the world between unqualified interference in a private house, where a great deal of mischief could be done, and unqualified assistance in an institution under the supervision of qualified medical practitioners The first of the four heads, he concluded, for which provision had to be made in the schemes of local authorities was medical examination and treatment during pregnancy as distinct from childbirth This was certainly intended to include what was dealt with in the report on maternal morbidity under the heading of prenatal treatment Therefore the whole weight of the endeavours of the central Department and the local authorities would be bent upon dealing with what, according to the reports that they had to guide them, was probably the most crucial period in the cure of maternal morbidity and the reduction of maternal mortality

The Bill was read a second time, and the financial resolution in connexion with it was afterwards agreed to in Committee

In the House of Lords on Feb 2nd the Ministry of Health Provisional Order (Evesham and Pershore Joint Hospital District) Bill was read a first time.

QUESTION TIME

WEDNESDAY, JAN 27TH

Experiments on Animals

Mr **Sandys** asked the Home Secretary whether he could give figures to show the average annual number of surgical experiments performed upon animals by vivisectors without the use of an anæsthetic, and what steps were taken by his department to ensure that the potential gain to scientific knowledge was commensurate with the suffering caused —Mr **Geoffrey Lloyd**, Under Secretary, Home Office, replied I presume my hon friend refers to severe surgical experiments which usually involve cutting operations The Cruelty to Animals Act, 1876, provides that experiments may be performed without anæsthetics on a certificate, called Certificate A, being given that insensibility cannot be produced without necessarily frustrating the object of such experiments Before my right hon friend allows any such certificate to come into operation he always attaches to the Licence a condition whereby no operative procedure more severe than simple inoculation or superficial venesection may be adopted in any of the experiments enumerated in the certificate The kind of experiments to which I presume my hon. friend refers are therefore never allowed without anæsthetics and consequently the second part of the question does not arise

Death-rate among Pensioners

Mr **Rhys Davies** asked the Minister of Pensions if he would state the death rate among adult male pensioners for each of the groups, 30 to 40 years of age, 40 to 45, and 45 to 50 —Mr **Ramsbotham** replied The death rates per thousand of adult male disability pensioners (Other Ranks) calculated for each of the age groups specified for the year ended 31st March, 1936, were as follows For comparative purposes the death rates for the corresponding groups of the civil (male) population have been added

Age-group	Death rate	Civilian.
35–39 years	7 1	4 8
40–44 ,	8 7	6 4
45–49	14 4	9 3

As there are only 250 pensioners under 35 years of age the age group 35–39 has been adopted

THURSDAY JAN 28TH

State Management of the Drink Traffic

Mr LOVAT FRASER asked the Home Secretary if in view of the statement by the Select Committee on Estimates that the cost of the London office for the State management of the drink traffic in Carlisle Gretna and Cromarty appeared to be excessive he had taken or proposes to take any action and if in view of the recommendation of the Select Committee on Estimates that the *whole organisation of the scheme for the State management* of the drink traffic in Carlisle Gretna, and Cromarty should be reconsidered he proposed to take any action.—Sir JOHN SIMON replied: The recommendations of the Select Committee have been considered by my right hon friend the Secretary of State for Scotland and myself. Making allowance for the fact that the cost of the London Office referred to by the committee includes the cost of the architect and his staff the room for any saving in this item appears to be small, but I am considering whether any reduction will be practicable. After reviewing the general organisation of the undertakings in England and Scotland my right hon friend and I do not propose to alter the existing system. This does not of course preclude consideration from time to time of possible improvements in the organisation.

Health Insurance Ophthalmic Regulations

Mr EDWARD WILLIAMS asked the Minister of Health whether he had considered the representations from the Institute of Chemist Opticians and other pharmacists as regards national health insurance ophthalmic and optical benefits in draft Statutory Rules and Orders, 1936 *No 434* and *what action he proposed to take in view* of these representations.—Sir KINGSLEY WOOD replied: The representations which have been made on behalf of the Institute of Chemist-Opticians will be brought to the notice of the Approved Committee to be set up under the new regulations. This committee is to include representatives of approved societies and organisations of opticians amongst which I understand that the Institute of Chemist-Opticians is to be included and it will be the duty of the committee to determine the qualifications which will entitle opticians to inclusion in a list of those to be recognised for the purposes of ophthalmic benefit.

British Pharmacists and Anti-Gas Work

Mr MITCHELL asked the Home Secretary what precise arrangements were to be made for training British pharmacists in anti gas work and whether any retaining fees would be paid to pharmacists for their assistance in the anti-gas scheme.—Mr GEOFFREY LLOYD replied: The Pharmaceutical Society generously offered the coöperation of its members in connexion with air raid precautions, and this offer was gratefully accepted. After discussion it was agreed that in the event of an emergency pharmacists could probably give the greatest service by carrying on with their *ordinary work. Arrangements* will be made as soon as possible for a number of places at the Civilian Anti-Gas School to be reserved for members of the society who will be trained as instructors with a view to their training other members of the Society in anti gas precautions. The answer to the second part of the question is in the negative.

Scarlet Fever in Doncaster

Mr SHORT asked the Minister of Health the additional cost to the ratepayers of Doncaster and the rural area, respectively due to the recent scarlet fever epidemic.—Sir KINGSLEY WOOD *replied: I am informed* that the additional cost to the rates due to the recent outbreak of scarlet fever caused by infected milk, is at present estimated at £305 in the borough of Doncaster and £70 in the rural district.

Hollywood Mental Hospital Medical Staff

Sir ARNOLD WILSON asked the Minister of Health whether any inquiry had been or would be held by his department as to the circumstances in which a medical practitioner at Hollywood Mental Hospital was retained on the staff although to the knowledge of the chief resident medical officer as stated at the inquest on the body of the man in question, he had been drinking heavily for the past eight years, and whether he was satisfied that the charge of mentally afflicted persons could safely be entrusted to men so affected.—Sir KINGSLEY WOOD replied: I am aware of the press report of statements made at the inquest referred to and I am in communication with the committee of the hospital. I should like to say however that the hospital in question has maintained a high standard in the care and treatment of the patients.

Deaths at Papworth Sanatorium

Mr ROWSON asked the Minister of Health the total number of deaths from tuberculosis and other causes which had occurred at Papworth Sanatorium, Cambridgeshire and also in Papworth Village Settlement during the past seven years.—Sir KINGSLEY WOOD replied: I am informed by the authorities of the Cambridgeshire Tuberculosis Colony Papworth that the total number of deaths which have occurred in the colony's hospital during the last seven years is 339 of which 28 were deaths of persons transferred from the Village Settlement and that the number of deaths actually occurring in the Village Settlement during the same period was 13. I cannot at present state the precise proportion of these deaths which were due to tuberculosis but I am making inquiries and will inform the hon Member of the result. I should add that the colony receives patients in all stages of tuberculosis including advanced cases.

Captain HEILGERS: Is it not a pity that anything should be said which might damage the reputation of an institution which has done most effective work for sufferers from tuberculosis?

Sir KINGSLEY WOOD: I did not understand that that was the case. This is however a fine example of the excellent work which is being done in the matter.

Papworth Sanatorium Employment of Patients

Mr ROWSON asked the Minister of Health if he was aware that persons suffering seriously from tuberculosis were employed in factories at Papworth and in some cases so employed until a few days before death; and if he would have an inquiry made into this situation.—*Sir KINGSLEY WOOD replied: I am making inquiries into* this matter and will inform the hon. Member of the result.

The Budget and Family Allowances

Mr RANKIN asked the Chancellor of the Exchequer whether his attention had been called to the rapid decline in population which was expected to take place in this country during the next 25 years; and whether in view of the difficulties which such a reduction would cause from the point of view of revenue he would give special consideration in connexion with his forthcoming budget to a further increase in family allowances.—Mr CHAMBERLAIN *replied:* My hon friend may rest assured that all relevant factors will be taken into consideration in framing the budget.

Maternal Mortality in Edinburgh and Glasgow

Mr GUY asked the Secretary of State for Scotland the figures for maternal mortality per thousand births in Edinburgh and Glasgow respectively for the last three years.—Mr ELLIOT replied: The rates of maternal mortality per 1000 births for 1934 1935 and 1936 were in the case of Edinburgh 5·3 6·3 and 5·[illegible] and in the case of Glasgow 6·0 7·0 and 5·0. The 1936 rates are provisional.

Alcohol and Road Accidents

Mr HARDIE asked the Minister of Transport if he was aware that a motorist convicted at the Old Bailey on Jan 10th for dangerous driving was charged by the judge as one of those who killed people on the road because they drink more than they ought; and whether as this and similar cases were not entered in the annual statistics as accidents due to drink, he would have the method of collection revised so that the statistics might be a fairer reflection of the facts concerning alcohol and road accidents —Mr HORE BELISHA replied Road accidents attributable to drink or drugs are already so classified In the case in question a sentence of six months in the Second Division accompanied by a suspension of licence for seven years was recorded on a conviction for dangerous driving The judge observed that the person convicted was "in a sort of twilight of sobriety" but there is no special subhead for this condition

Basement Dwellings in London

Mr LYONS asked the Minister of Health if any recent investigations had been made into the number and nature of basement dwellings in various parts of London and with what results —Sir KINGSLEY WOOD replied The most recent investigation was made in 1934 According to the returns then obtained by the London County Council from the metropolitan borough councils, 20 108 underground rooms in use for sleeping purposes were deemed to be unfit for human habitation within the meaning of section 18 of the Housing Act, 1925

MONDAY, FEB 1ST

Government Employees in Basement Offices

Lieut Commander FLETCHER asked the Parliamentary Secretary to the Ministry of Health, as representing the First Commissioner of Works, if he had received any representations concerning Government employees compelled to work in basement offices, and, if so, what departments were concerned and what action was proposed —Mr R S HUDSON replied Representations have been received by my noble friend from the Staff Sides of the Departmental Whitley Councils for the Board of Education, Ministry of Health, Board of Trade and Office of Works concerning the continued use by clerical staffs of the basement courts of the Government Offices, Westminster, Southern Block. Pending the vacation of the basement courts, in accordance with the arrangements as originally planned, consideration is being given to the points raised by the staffs as to the detailed working of the ventilation arrangements and the improvement of the access to the basement

Physical Training in Schools

Mr SHORT asked the President of the Board of Education how many local educational authorities had appointed special organisers for physical training, and whether Doncaster was among the number —Mr G SHAKESPEARE, Parliamentary Secretary to the Board of Education, replied 170 local education authorities have appointed one or more whole time or part time organisers of physical training and a number of other authorities are considering the question of making such appointments The number of organisers now employed by local education authorities is 236 A proposal for the appointment of organisers has not yet been received from the Doncaster authority, but it is understood that the authority are considering the matter, and the Board wrote to them on Dec 1st last calling their attention to its importance

Children's Branch of Home Office

Mr LOVAT FRASER asked the Home Secretary why his office had ceased to issue reports of the children's branch —Mr GEOFFREY LLOYD Under Secretary, Home Office, replied There are a number of reasons—in particular the additional labour involved in the preparation and bringing into force of the Children and Young Persons Act, 1933—which have prevented the issue of a report in recent years My right hon friend is fully aware of the value of these reports and a further report will be issued as soon as circumstances permit

Experiments among Recruits Below Standard

Mr BELLENGER asked the Secretary of State for War whether he could make a statement on the experiment of special training and nourishment for certain selected recruits under standard, and whether he proposed to extend the experiment to include large numbers of recruits now rejected as unfit —Mr DUFF COOPER replied At the end of the initial three months' training, 31 of the 33 recruits who had been selected for experiment were adjudged to be fit to start the normal recruits' course and were passed to their regimental depôts for this purpose Twenty four have since been passed as up to standard, while 7, who have not yet reached normal standard, but have made such progress as to justify their retention, are under special observation at their depots The experiment is regarded as successful, and its practical application on a larger scale is under consideration

Government's Physical Training Scheme

Mr SANDYS asked the President of the Board of Education whether he could announce the Government's plans for improving the national standard of physical fitness —Mr OLIVER STANLEY replied I hope that a White Paper explaining the Government's proposals will be issued on Thursday next

B.M.A and Medicine Advertisements in Stamp Books

Sir NICHOLAS GRATTAN DOYLE asked the Postmaster General whether he had received representations from the British Medical Association respecting certain classes of advertisements appearing in the books of stamps issued by the Post Office, and whether he proposed to take action in the matter —Sir W J WOMERSLEY, Assistant Postmaster General, replied Representations on this subject were received from the British Medical Association a few years ago My right hon friend recently reviewed the matter in connexion with a question asked on Dec 7th last, and found no reason for altering the present policy, which is to exclude advertisements of medicines purporting to cure certain diseases specified in Paragraph 58 of the Report of the Select Committee on Patent Medicines, 1914, but to accept other advertisements whose wording is not objectionable and whose bona fides is not suspect

A CLEARING-HOUSE FOR HOSPITAL EMERGENCIES IN LONDON

THE Voluntary Hospitals Committee for the county of London, which since its constitution in July, 1935, has done so much to make the voluntary principle effective, has now embarked on a new and ambitious scheme It is nothing less than the provision of a central office to facilitate the admission to voluntary hospitals of emergency and acute cases There are already arrangements for the transference of accident cases from voluntary to municipal hospitals, and these are now being extended by arrangement with county councils outside London, but apart from accidents it still happens that a doctor who is in urgent need of a bed for an acutely ill patient has to ring up a number of hospitals before he can find one A central office would be able to tell him forthwith where to send his patient, and would warn the hospital of the patient's impending arrival It is difficult to see whether doctor, hospital, or patient would gain the more by such a clearing house All the hospitals have been consulted and nearly 100 have replied, 61 of them have expressed willingness to coöperate in the proposal, and only 3 stand out This unusual degree of unanimity should ensure the success of the scheme if it is in the hands of promoters who admit no discouragement The working out of the proposal has been remitted to a committee consisting of Dr A M H Gray, Dr Geoffrey Evans, with the chairman and hon sec (Prof L S Dudgeon) of the committee, and Mr A J Gardham, F R C S, and Mr C M Power as coöpted members

PUBLIC HEALTH

Accredited Milk

ON Jan. 28th a conference was held at the Central Hall Westminster under the auspices of the Royal Sanitary Institute and attended by delegates from all over the country to consider the administration of the Milk (Special Designations) Order 1936 with respect to accredited milk. Mr THOMAS BAXTER, chairman of the Milk Marketing Board presided and explained the aims of the Board in establishing a roll of accredited producers

The discussion was opened by Dr W G SAVAGE medical officer of health for Somerset, who pointed out that while on paper there was reasonable uniformity in practical working there were material divergencies Three requirements he regarded as essential (1) compliance with the Milk and Dairies Order 1926 (2) provision and utilisation of efficient means of steam sterilisation (3) provision of certain minor equipment essential for clean milk production The main divergence arose over the first requirement owing to the vagueness in the wording of the order and the different interpretations placed on its enforcement. Uniformity of administration suffered from the varied types of officer employed to carry out the inspections but this did not matter much for the only basis on which uniformity of practice could be attained was uniformity of knowledge The inspecting officer should be one who had acquired special experience in clean milk production Clean milk production could not be controlled by printed requirements suitable premises were necessary but they were not so important as trustworthy methods

Mr F W MEDLOCK chief veterinary officer to the Essex C C dealt with the veterinary aspects of the problem and discussed the difficulties of laboratory sampling.

Mr F H LONG chief sanitary inspector to the Hereford R D C insisted that the local sanitary authorities and their inspectors were responsible for the operation of most of the order and that their coöperation was essential. He admitted the wide differences of administrative practice

Mr W T PRICE agricultural organiser to the Wilts C C dwelt on the agricultural side and the need to associate the organisers with the work

VETERINARY CONTROL

When the meeting was thrown open to discussion many persons prominent in milk control took part each speaker emphasising the importance of the particular office or section which he represented There was however a general feeling that it should be possible for the various interests to get together and evolve a scheme for more uniform administration

Several veterinary officers present regarded Dr Savage's remark on the value to the accredited milk scheme of veterinary inspection as a criticism of the value of veterinary work generally Dr Savage replied that he was strongly in favour of enlisting veterinary surgeons in any scheme for improving the milk supply—he was in fact himself largely responsible for whole-time veterinary surgeons having been appointed in his own county—but he felt they were misapplied in routine veterinary inspection and should be utilised mainly to build up herds free from tuberculosis. The words to which exception were taken were Personally I do not regard the veterinary control required as materially influencing its safety —and this was Dr Savage suggested a scientific matter capable of being judged by the application of scientific facts. He agreed that the quarterly veterinary inspection required under the Accredited Scheme was of service to the milk producer but it did not materially influence the safety of the milk. Most of the conditions detected, of which mastitis was the commonest were of importance in relation to the health of the herd but of no moment as regards human safety for they were not transmissible to man The veterinary control did not concern itself with undulant fever and practically the only disease which came into question was tuberculosis But this control had no effect on the incidence of bovine tuberculosis and indeed no such effect was to be anticipated Some slight reduction might be expected in the incidence of tubercle bacilli in the milk but examinations of Grade A or accredited milk all over the country showed still a high proportion of samples containing tubercle bacilli. For 1936 in Somerset of all the 442 samples collected at farms 3 3 per cent were positive in the samples from accredited farms taken separately the percentage was not smaller Veterinary control did not alas! materially influence the safety of accredited milk.

Ophthalmia Neonatorum

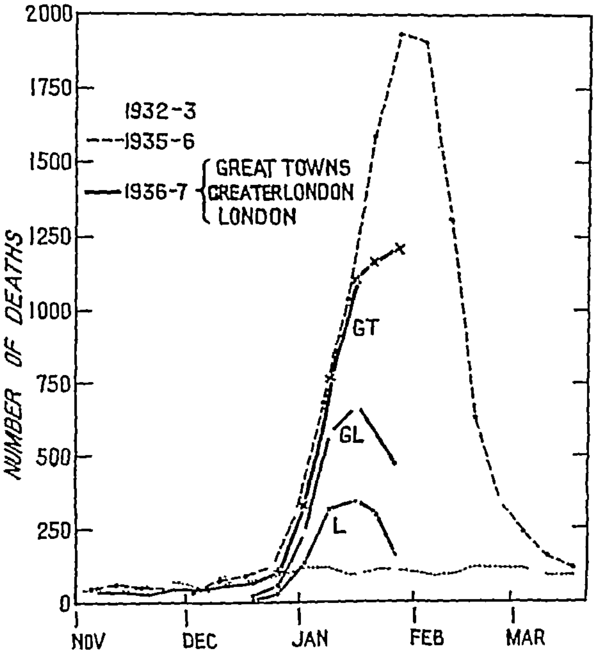
It is the statutory duty of the maternity and child welfare authority to give assistance in cases of ophthalmia neonatorum by providing nursing in the home and if deemed advisable hospital treatment outside it The time element is important as the value of treatment depends chiefly on the speed with which it is given But this authority does not now receive as by right the information it needs to do this; it comes only indirectly through the county authority The Ministry of Health has been urged to arrange that ophthalmia should be notified directly to the M.O H of the M and C W authority and this will be ensured as from April 1st next by new regulations (1937 No 35) The M O H of a district council which is not a M. and C W authority will now receive from the county M O H prompt information of any cases occurring in his district and contrariwise the county M.O H will learn of all cases which occur in the administrative county The new arrangement although it sounds complicated will simplify procedure and will ensure that the baby whose eyes are in danger gets the right kind of attention in the shortest time

The Welsh Tuberculosis Scheme

A frank discussion took place last week between the King Edward VII Welsh Memorial Association and the contributing authorities Lord Davies who presided, admitted that the hopes of rapid progress with which the Association started twenty years ago had not been realised. The mortality rate of tuberculosis per 100 000 of the Welsh population had only dropped in the period from 110 to 92 compared with a drop in England from 103 to 70 and in Scotland from 111 to 74 The Association is proposing to build a new tuberculosis hospital of 250 beds at Swansea and to form a nucleus of two village settlements the total expenditure for the five year period being estimated at nearly £[illegible]00 000 The contributing authorities complained that the halfpenny rate of 1912 had increased to a fivepenny rate in counties like Flint and they were spending on tuber culosis more than half the whole outlay on public *health services* The scheme is to be further considered by financial experts

Influenza

Last week influenza accounted for 1155 deaths in England and Wales, and for 154 deaths in London Reference to the graph will show better than words the trend of the epidemic up to Saturday last In the previous week although London had passed the peak the midland and northern areas were still showing higher returns—e g, Birmingham 51, Nottingham 26, Sheffield 49, and Manchester 41 deaths While in London we are breathing freely—the notifications of pneumonia last week dropped from 326 to 211—the situation in the north is less satisfactory In Liverpool for example many cases are being admitted to hospital with capillary bronchitis, and extreme prostration is a feature even of uncomplicated cases In Sheffield there were 65 deaths last week Throughout Scotland the epidemic is still causing inconvenience Practitioners on the whole, however, are less busy than they were two weeks ago, and in Edinburgh there is an impression that the worst is over Although last week's death roll was the highest since the 1929 epidemic, 78 per cent of those who died were over the age of 45 In Dublin influenza has become more widespread and many business establishments are suffering from depletion of staffs In several hospitals inconvenience has arisen from the large number of nurses ill, and some visiting staffs are suffering heavily The type of disease has not generally been grave



Graph showing total deaths from influenza in the Great Towns on the last day of each week in three different years

Small-pox in Failsworth

The two cases of small pox notified in a recent return from Failsworth illustrate the difficulties of dealing with the disease when it occurs in so mild a form On Jan 11th Mrs A, aged 62, was removed to Hartshead small pox hospital She had taken ill on Jan 3rd with headache and pains in the back, and the rash appeared on Jan 6th. She had been vaccinated in infancy but not since. Her illness ran a mild course, and she was discharged on Jan 29th. The urban district of Failsworth is contiguous to Oldham where a small outbreak occurred in December, but it was only after intensive oblique inquiry that it was discovered that Mrs A's sister, Miss B, aged 72, living in the same house, had been indisposed from Dec 21st to 23rd, and when examined on Jan 12th was found to have a fading rash on face and forearms The diagnosis was confirmed the following day, and Miss B was removed to the small pox hospital from which she was discharged well on Jan 22nd. She had been vaccinated in infancy and again on Jan 11th after removal of her sister On further inquiry it turned out that Miss B had visited at the two houses in Oldham where the four previous cases had occurred The patients were in fact her near relations, and the Failsworth cases were thus brought into their natural relation with the Oldham outbreak All the contacts in the Failsworth house have been revaccinated, as well as the staff of the public health department and the doctors in attendance

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INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JAN 23RD, 1937

Notifications—The following cases of infectious disease were notified during the week Small pox, 0, scarlet fever, 1671, diphtheria, 1294, enteric fever, 61, pneumonia (primary or influenzal), 3135, puerperal fever, 42, puerperal pyrexia, 147, cerebro spinal fever 34, acute poliomyelitis, 3, encephalitis lethargica, 10, dysentery, 21, ophthalmia neonatorum, 72 No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Jan 29th was 3701, which included Scarlet fever, 833 diphtheria, 1014 measles 17 whooping cough 582 puerperal fever 19 mothers (plus 8 babies), encephalitis lethargica 286 poliomyelitis 2 At St. Margaret's Hospital there were 20 babies (plus 8 mothers) with ophthalmia neonatorum

Deaths—In 122 great towns, including London, there was no death from small-pox, 4 (0) from enteric fever, 6 (0) from measles, 5 (1) from scarlet fever, 28 (7) from whooping-cough, 34 (7) from diphtheria, 33 (10) from diarrhœa and enteritis under two years, and 1137 (273) from influenza The figures in parentheses are those for London itself

Liverpool reported all the 4 deaths from enteric fever Middlesbrough had 3 deaths from whooping-cough, Stockton on Tees and Grimsby each 2 Fatal cases of diphtheria were reported from 17 great towns Hull and Liverpool each 4 Manchester and Sheffield each 3

The number of stillbirths notified during the week was 308 (corresponding to a rate of 48 per 1000 total births), including 37 in London

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Leicester City Hospital—Leicester health committee on Jan 22nd passed plans for extensions at this hospital which will include accommodation for the aged, and chronic sick, and a new nurses' home The estimated cost of the scheme is given as £300,000

Westminster Hospital—As a result of the festival dinner held at the Mansion House in aid of this hospital £12,900 has been collected towards the Coronation wing of the new building and £1000 as an endowment of which the income is to be used to provide additional comforts for nurses and extra holidays for convalescent nurses

MEDICAL NEWS

University of Oxford

Mr Hugh Cairns has been appointed to the Nuffield chair of surgery and Dr R R Macintosh to the Nuffield chair of anæsthetics

Mr Cairns, who is 40 years of age was educated at the Adelaide High School and is a medical graduate of Adelaide University where he was exhibitioner Davies-Thomas scholar and Everard scholar After serving with the Australian Army Medical Corps he entered Balliol College as a Rhodes scholar in 1919 He worked in the department of physiology and rowed in the Oxford boat in 1920 He was house surgeon at the Radcliffe Infirmary in 1921 and in the same year went to the London Hospital serving successively as house surgeon, house physician pathological assistant and first assistant in the surgical unit He took the fellowship of the Royal College of Surgeons of England in 1921 In 1926 he was elected to the staff of the London Hospital and was then given leave of absence to go with a Rockefeller fellowship to the United States where he became for a year assistant resident surgeon in Dr Harvey Cushing's clinic in Boston On his return he wrote a "Study of Intracranial Surgery" which the Medical Research Council published in its special report series (No 125) Since then after some years on the general surgical staff he has established at the London Hospital a department of neurosurgery largely inspired by Cushing's ideals A recent paper which illustrated his continued association with the Boston clinic and the methods employed both there and in London is his account of the fate of patients operated on for intracranial tumour during his visit to the United States in 1926 (THE LANCET 1936 i, 1223, 1291) Mr Cairns has also written much on brain abscess and head injuries and their treatment and in 1926 before devoting himself to intracranial surgery he gave a Hunterian lecture to the Royal College of Surgeons of England on neoplasms of the testicle In 1935 he was awarded the triennial gold medal of the West London Medico-Chirurgical Society He is also honorary surgeon to the National Hospital, Queen-square

Dr Macintosh who is 39 is a former student of Guy's Hospital. He qualified in 1924 and two years later obtained the fellowship of the Royal College of Surgeons of Edinburgh His post-graduate experience included appointments in the venereal diseases department of Guy's at Lambeth Hospital and at the British Hospital at Montevideo (Uruguay), where he was resident surgical officer On returning to England he began to practise as an anæsthetist with an honorary appointment in the dental school at Guy's He is now anæsthetist to the Throat Hospital, Golden-square and anæsthetist and lecturer in anæsthetics in the dental department of University College Hospital He has written on blood transfusion and on anæsthetics in dental surgery and a few years ago contributed to the Battle of the Barbiturates in our correspondence columns where he wrote of the importance of developing methods of pre-anæsthetic medication

Prof Cairns's appointment dates from Jan 27th and Prof Macintosh's from Feb 17th It is understood however that their duties will at present allow them to go on with their work in London.

Royal College of Physicians of London

A comitia of the College was held on Jan 28th with Viscount Dawson of Penn the president in the chair The election of the president as a vice-president of the Imperial Cancer Research Fund was approved and Dr E Mapother was elected a councillor The following were appointed delegates of the College: Lord Dawson of Penn to the centenary celebrations of the University of Durham July 1st to 3rd; Dr H P Newsholme to the health congress of the Royal Sanitary Institute at Birmingham July 12th to 17th; Lord Horder to the annual congress of the Royal Institute of Public Health at Margate May 25th to 29th and Dr H C Cameron to the seventh English-Speaking Conference on Maternity and Child Welfare to be held in London June 1st to 3rd

Dr D'Arcy Hart will deliver the Milroy lectures on measures for the prevention of pulmonary tuberculosis among adults in England—in the past and in the future on Feb 18th and 23rd; Dr D L Denny Brown the Goulstonian lectures on the nervous control of micturition and its disorders on Feb 25th March 2nd and 4th Dr Crighton Bramwell the Lumleian lectures on the arterial pulse in health and disease on March 9th and 11th; and Dr H Gardiner Hill the Oliver Sharpey lectures on growth and development their pathological aspects on March 16th and 18th. All the lectures will be given at the College at 5 P.M The following candidates having satisfied the censors board were admitted members of the College:—

Frank Longstaff Apperly, M D Oxon M D M B Bidya Pati Bhattacharjya M B Patna Bernard Roy Bramwell, M B Toronto John M D Manch Francis Staples Brien Alfred Brocklebank M B Lond George Horace Brookman, L.R.C.P Lond James William Douglas Bull, M B Camb Renfrey Gershon Burnard, M B Adelaide Archibald Malcolm Gordon Campbell, M B Oxon Winston Stephen Charters M B N.Z. Stephen Thomas Falla, M.D Lond, John Ronald Forbes M.B Lond, Graham William Hayward M.B Lond. Dorothy Jane Healey M D Lond Tom Shadick Higgins M D Lond Norman George Hulbert, M.B Camb, Norman Maurice Jacoby, M.B Lond Alan Robert Kelsall, B.Chir Camb Peter James Kerley M.D Dubl Frederick Basil Kiernander M.B Lond Mary Fauriel Lockett, M.D Lond William Neville Mann M B Lond Harry Blight May M B Camb, Edward Laurence Oliver Murphy, M B N U I Richard Alan Pallister M D Durh.; James Alan Price M D Belf. Alan Boynton Raper M D Leeds John Clifford Richardson, M.D Toronto Leon Eric Rothstadt, M.D Melb Charu Chandra Saha Saha M B Calcutta; Dominic Victor Shell M B Melb Henry James Sinn M.B Melb Alan Herbert Thompson M D Dub Aly Fahmy Zanaty M.B Cairo

Licences to practise were conferred on 178 candidates (156 men and 22 women) who have passed the final examination of the Conjoint Board The following are the names and medical schools of the successful candidates:—

K. D G Abbott, Manch E. M Abelson Leeds and West Lond. J G. Adams St Mary's; A S Aldis, Univ Coll C. F S Aiken, Oxon and Middlesex J H Armstrong St. Bart's; Mary Barker Sheff H M Barnett Witwatersrand and Lond, I H Baum, St. Bart's A M Beemer, St Mary's Bryant Bell, Witwatersrand and Guy's A J Bernfield Middlesex; Lily Black, Leeds L H Blakelock and G W Boden St. Bart.'s Eric Bolton, Cambridge and Univ Coll; E R. Bowes Guy's, Audrey E M Briggs Camb and Roy Free; E. E. Brownrigg Middlesex J B Bunting Camb and St Thomas's G L Burgess Guy's Margaret M Burton Roy Free M A Carpenter, St. Bart.'s K. W Clarke St Thomas's C. L. Clinton Thomas, Univ Coll. P R. K Coe, Westminster S M Cornes, Manch. H D Crosswell, Middlesex John Dalziel, and G H Darke St. Bart's I M Davies Guy's H N Davy Camb and St Thomas's; I C Dhanda Punjab and West Lond, W R. S. Doll, St Thomas's I A. Donaldson, Middlesex R. O. Droop Camb. and St Thomas's G H H Dunkerton, King's Coll J A. Dunlop St Thomas's, R W Dunn St Bart's H J Eastes Univ Coll. C H Edwards Guy's B H Ellis, St Bart's J B Ellis Camb and St Thomas's; J E. Ennis St. Bart's; L C de R Epps Camb and St. Thomas's; M M Ernst Univ Coll Mildred G Ernst Roy Free and West Lond R. G G Evans Cardiff; G R. Faber Camb and Lond.; Mary N Fawcett King's Coll. J G Fife, St Mary's F D M Flowerdew, St. Thomas's Lancelot Foster and R. A Foucar St Bart's; Gwenda M Francis Roy Free D G Freshwater, Camb and Westminster A R. Garner Lond M N Genena Univ Coll Sidney Gnossen, Lond. Douglas Graham Brown and P H K. Gray Guy's W M Gray King's Coll., B J Green, Liverp T A. Hale-Monro Guy's E H Hambly, St. Bart's R P Harbord, Liverp, William Hargrave-Wilson St George's; D H Harrison, St Thomas's; M W Harvey and George Herbert, St Bart.'s Irene K Hewlet Univ Coll.; C A St C Hiley Lond Constance M Hill, Birm Emily O. Hill West Lond; William Hobson Leeds; Margaret J Honeywill Univ Coll C W Horncastle King's Coll; Jacob Horowitz Univ Coll.; A. M Howard Cardiff; H N G Hudson Middlesex Gertrude L E. Hughes Roy Free; D A Ireland, Oxf and St. Thomas's; Isaac Isaacs Cardiff G C A Jackson St Thomas's Harry Jackson, St Bart's E. M Japha Middlesex, O L. Jones Liverp, Arthur Jordan, St Bart's H S Kander St Mary's Mary Kane, King's Coll and Cardiff Sidney Kaye, Lond J G Kee St Mary's Colman Kenton and Joseph Ketcher Lond. C C Kirby, St Mary's; L. M Klusky Lond F D W Knight St Bart.'s G S A Knowles, Lond, D W Lacey, Middlesex Iris M Lamey Roy Free R. L Lamming Leed J D Laycock St Thomas's John Leiper, Liverp J W M Leslie St. Thomas's; H G A Lilwall, Guy's C J Longland St Bart's; Myer Lubran A. D McDonald and H A. McDonald Guy's W H M Donald, Lond N R McEvoy Guy's Robert McGladdery St Bart's; H McD Mackey Leeds Norma M MacLeod, King's Coll K. J Mann, Univ Coll; G S Midgley, Westminster; A K. Miller Middlesex Eleanor M Mills Manch A D Milne Guy's J G Mitchell Camb and St Bart's R. H R. Mole and K. W Monks Camb and St Thomas's; F R. Mountjoy St. Bart's, M A H Munshi Univ Coll W M Owen, St. Thomas's; A C. D Parsons Westminster H A Pearce St Bart's G I Pett St Thomas's Charles Porter Oxon and St. Thomas's; K J Powell Univ Coll T G Probyn Camb and King's Coll Polly [illegible] Lond D I Puri, Punjab and West Lond; A N Redhead, Guy's, J F Rees, King's Coll H S Resnik Witwatersrand and St Bart's; Nancy E. O Richardson Univ Coll; R H K. Rickford, St Thomas's; A C Ricks, Guy's Elizabeth J Rooke Univ Coll; H L M Rouaille St. Bart's I H L Saltman Witwatersrand and St. Bart's A A Selein Guy's; Alexander Simpkin, Liverp Gurbachan Singh Janda, J Serwin and West Lond. John Smallpeice King's Coll, C I Smith Middlesex; E. R. Smith St Thomas's J A Smith Birm; Katharine D Smith Roy Free and Leed G R. Steed King's Coll; W A. Steel, Univ Coll R N Stephenson, St Bart's; Edith M Strong Roy Free R. B Taylor Lond R N Taylor Oxon and Guy's; W H A Thorne St Thomas's; H L Thornton St. Mary's G C Trebilder Lond I D Truax Guy's

Neville Tsan, Camb and St George's A G Turner and D P van Meurs, St Thomas's, Daisy C Wallace, A. J N Warrack, St Thomas's, G R Waterman, Lond Joan M Wenn Roy Free M H G White, Middlesex D I Williams King's Coll, G M Woddis St Bart.'s R C Wofinden, St. Mary's, N P Woodgate Jones, Middlesex, M R Woods, Guy's George Wynn Williams, King's Coll and Westminster G E Yardley Guy's, F H Yates, St Bart's, A L Young Oxon and Guy's and S S Yudkin Univ Coll

Diplomas were granted, jointly with the Royal College of Surgeons, to the following candidates —

Tropical Medicine and Hygiene.—R M Abraham E E Barnett H B F Dixon I K El Lamii W J Pinto, G B Smart and P W Vilain

Diplomas in anæsthetics were also granted to those candidates mentioned in The Lancet of Dec 19th, p 1497, and diplomas in public health, psychological medicine and laryngology and otology to those mentioned in The Lancet of Jan 23rd, p 242

University of Edinburgh

At a recent meeting of the university court it was announced that the University Grants Committee had offered a non recurrent capital grant, up to a maximum of £15,000, towards the cost of building a students' union for men and women on the King's Buildings site at Westmains road The building will include a refectory and gymnasium The total cost is estimated at £20,000 and the committee offered a grant on condition that the balance is obtained from other sources and that the scheme is proceeded with as soon as possible—in any case, within two years The present students' unions are too far from the New University at King's Buildings for them to be of much value to the increasing number of students who spend a large part of their day in the new buildings

Scottish Conjoint Board

At recent examinations by the board of the Royal Colleges of Physicians and of Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow, the following candidates were successful —

Kurt Aaron A M Allison, Albert Blanshaft, A. E R Chalmers S F Cranston *Hester J Davies James Drake A A Esser, Philippe Evreniades *E W Finkle, D G Hanton *L B Hardman, I L Jacobs, William Jonas, Leo Kroll Dean Lederfeind M E Lee Abbott, *Zotlan Leitner W J Low, James McGibbon J M MacGregor Manuel Manella Moritz Meyer, W B Meyer Lorenz Michaelis D B Milne M N Mitra K F Nagelschmidt, Reuben Naftalin Hugh O Hara E A Perera H J Phin F O Piorkowski I E Price, K M Regensburger M W Rosenthal Allen Rumelt, Martin Scholtz Harold Sherry F F Truax Demetrios Varvaressos Lena Walker, *B A M Williamson, H A J Wolff and Harry Zeller

* In absentia

Empire Tuberculosis Conference

A conference on the care and after-care of the tuberculous is to be held at Overseas House, St James's, from May 3rd to 8th, under the auspices of the Overseas League and Papworth Village Settlement The subject for the first day is the Fight against Tuberculosis throughout the Empire to be introduced by Sir Kingsley Wood and Prof S Lyle Cummins, for the second day, the After care of the Tuberculous throughout the Empire, to be introduced by Sir Pendrill Varrier-Jones and Dr B A Dormer, on the third day Lieut Colonel G G Jolly, I M S, and Dr P V G Benjamin will introduce the subject of the Native Races and Tuberculosis throughout the Empire At a recent informal meeting Lord Willingdon, who will preside at the conference explained what an unrivalled opportunity the Coronation offered of getting together interested people from all parts of the Empire Sir Pendrill said that, as tuberculosis had been introduced by the white man to races which had hitherto been free from it it was part of our Imperial responsibility to combat the disease on every front, social and economic as well as medical Little progress would be made, he felt, unless the victims of tuberculosis were given an opportunity of working and earning in a suitable environment Prof Cummins spoke of the conference as an essential step to the better comprehension of the problem of preventing and curing tuberculosis in the native populations which had shown themselves intensely susceptible to tuberculosis when brought under industrial conditions A preliminary programme of the conference may be had from the hon secretary, Empire Conference (Tuberculosis), Overseas House, St James's, London, S W 1

University of Liverpool

On Thursday Feb 11th, Mr Walter Mercer, lecturer in clinical surgery in the University of Edinburgh will deliver the Lady Jones lecture in orthopædic surgery to the University He will speak at 4 P M in the medical school, and his subject will be anomalies of the fifth lumbar vertebræ The lecture is open to members of the medical profession

Royal Society of Medicine

At 8 30 P M on Thursday, Feb 11th Sir John Parsons, F R S, the president, will receive fellows of the Royal Society of Medicine and their friends at the society's house, 1, Wimpole street, W At 9 15 P M Dr T Graham Brown, F R S, professor of physiology in the University of Wales, will give an illustrated address on mountain climbing in three continents

Improvement of Eyesight

Opening the Exhibition of Ophthalmic Goods and Equipment at the Royal Horticultural Hall last Tuesday, Sir Kingsley Wood, Minister of Health, said that though the total amount of eye deficiency showed little sign of abating the incidence had to some extent been shifted to the later years of life, and much was being done in the prevention of blindness He mentioned that whereas before the late war some 90 per cent of the spectacle lenses used in this country were of foreign manufacture, the proportion had now fallen to about 25 per cent

Association of Industrial Medical Officers

The sixth meeting of this association was held at the London School of Hygiene on Jan 22nd, Dr N Howard Mummery being in the chair —Prof Millais Culpin discussed the recent development of medical psychology, showing how it represented in some ways a return to earlier conceptions, with a swing of the pendulum towards the recognition of psychological factors Sickness incidence varied in its diagnostic distribution in accordance with fashion, neuritis and traumatic neurasthenia for example tending to disappear He remarked on the curious inability to diagnose common psychoneurotic conditions There were medical men who repudiated the psychological point of view and were therefore prone to miss such cases and to live in a happy state of unjustified certainty —Miss May Smith, D Sc, described the historical evolution of modern industrial psychology, and put forward a plea for a more intelligent understanding of the human factor in industrial medical practice The industrial medical officer, she maintained, should be the main link between industry and the work of the Industrial Health Research Board

At the quarterly dinner held the same evening in the School of Hygiene Dr Mummery was presented with an inscribed silver tray on his retirement from the chairmanship In making the presentation Prof W W Jameson paid tribute to his pioneer work after the War in the establishment of the modern industrial clinic Dr Leonard P Lockhart succeeds Dr Mummery in the chair

The People's League of Health

At a luncheon on Jan 19th in the Savoy Hotel, London, Lord Leverhulme asked for the coöperation of the press and of the officers of the People's League of Health in its first national appeal The League, he said, was founded in 1917 by Miss Olga Nethersole, and its objects were expressed by the adage "prevention is better than cure" It was trying to remove the disease, wastage and suffering that were due to ignorance and to bad environment and nutrition To this end the League published a great variety of authoritative pamphlets disseminated leaflets, and posters, promoted health weeks and exhibitions, instituted courses of lectures at various centres, and had awarded eleven travelling scholarships Through its inquiry bureau it was helping individuals and institutions seeking advice on matters of health and the prevention of disease Special committees had investigated specific problems and when the League's findings were conclusive they had been impressed upon the Government by various deputations such as those on the effects of unemployment on juvenile delinquency, and on noise Other important inquiries included those into tuberculosis and milk, leading to the safe milk campaign, and

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[illegible]

[illegible] to [illegible] and Child Welfare [illegible] woman [illegible] Clinics provided [illegible] other [illegible] attend for advice and treatment [illegible] there was no [illegible] ment of clinics [illegible] the deputation [illegible] maternity and child welfare [illegible] designed or equipped [illegible] as a place for the treatment [illegible] were their prevention [illegible] being mixed up [illegible] resources of a hospital [illegible] hoped shortly to receive [illegible] investigation into maternal mortality [illegible] doubt that one of the most important [illegible] of the investigators would relate [illegible] sion of postnatal clinics [illegible] advice could lawfully be given [illegible] case pregnancy would be [illegible] was desirable that such [illegible] separate session. The establishment [illegible] would no doubt show the need in many [illegible] gynaecological clinics for the treatment [illegible] diseases which were discovered at the post-natal [illegible] and which could not be adequately treated [illegible] clinics must be provided under the [illegible] they would be available for any woman [illegible] gynaecological condition and birth control advice could lawfully be given them if pregnancy would be detrimental to health.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W C

Monday, Feb 8th —5 P.M., Mr A. R D Pattison Cushing's Syndrome

Wednesday —5 P.M Mr D W C Northfield Headache

Friday —5 P M Mr F H Bentley Experimental Nerve Anastomosis (Hunterian lectures)

UNIVERSITY OF LONDON

Tuesday, Feb 9th —5 30 P M (St. Mary's Hospital Medical School), Prof E D Telford Some Disorders of the Peripheral Circulation (First of three lectures)

UNIVERSITY OF LIVERPOOL

Thursday, Feb 11th —4 P M. (Medical School), Mr Walter Mercer Anomalies of the Fifth Lumbar Vertebra Reflections and Experiences (Lady Jones lecture)

GRESHAM COLLEGE, Basinghall street, E C

Tuesday, Feb 9th and Wednesday, Thursday, and Friday.—6 P M Dr J Alison Glover Inanimate Vehicles of Infection

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane-road W

Monday Feb 8th —2 30 P M, Dr H MacLean Nephritis and Allied Conditions

Tuesday —2 P.M., Dr J Grey Pathology of the Gall bladder

Wednesday —Noon clinical and pathological conference (medical) 2 30 P M, clinical and pathological conference (surgical) 4 30 P M Mr A S Parkes, F R.S Experimental Endocrinology

Thursday —Noon clinical and pathological conference (obstetrics and gynæcology) 2 30 P M, Dr Duncan White radiological demonstration 3 30 P.M, Mr A K Henry Demonstrations on the Cadaver of Surgical Exposures 3 30 P M. Dr A A. Moncreiff Feeding of the New born Infant (Breast and Artificial) Care of the Premature Infant

Friday —2 P M, operative obstetrics 2 30 P.M, Prof E Hey Groves Fractures 3 P M, department of gynæcology, pathological demonstration

Daily, 10 A.M to 4 P M medical clinics surgical clinics and operations, obstetrical and gynæcological clinics and operations

WEST LONDON HOSPITAL POST GRADUATE COLLEGE, Hammersmith W

Monday Feb 8th.—10 A.M. skin clinic 11 A.M surgical wards 2 P M., operations surgical and gynæcological wards, medical surgical, and gynæcological clinics 4 15 P M Mr Arnold Walker Ante partum Hæmorrhage

Tuesday —10 A.M. medical wards 11 A.M surgical wards 2 P.M., operations, medical surgical and throat clinics 4 15 P M Dr Hugh Gordon Baldness

Wednesday —10 A.M., children's ward and clinic 11 A M medical wards 2 P M, gynæcological operations medical surgical, and eye clinics 4 15 P M. Dr Grainger Stewart Compression Paraplegia

Thursday —10 A.M, neurological and gynæcological clinics Noon, fracture clinic. 2 P M., operations medical, surgical and genito urinary and eye clinics 4 15 P M. Mr Sangster Simmonds Diseases of the Alimentary Tract.

Friday —10 A M. medical wards, skin clinic Noon lecture on treatment 2 P.M operations medical surgical, and throat clinics 4 15 P M., Dr Sydney Owen Meningitis

Saturday —10 A.M., children's and surgical clinic 11 A.M, medical wards

The lectures at 4 15 P M are open to all medical practitioners without fee

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole street, W

Monday Feb 8th, to Saturday Feb 13th.—St John's Hospital Leicester square W C, afternoon course in dermatology (open to non members) —National Temperance Hospital, Hampstead road N W Tues., 8 30 P.M. Mr R A Fitzsimons Infection of Bones Thurs 8 30 P M. Mr W E Underwood Diseases of and Injuries to Joints, Muscles, and Tendons — Chelsea Hospital for Women Arthur-street S W, all day course in gynæcology —Courses arranged by the fellowship are open only to members

HOSPITAL FOR SICK CHILDREN, Great Ormond street, W C

Thursday Feb 11th.—2 P M., Dr Donald Paterson Therapeutic Measures in Acute Gastro enteritis 3 P M Dr Bertram Shires Radiation and Light Therapy

Out patient clinics daily at 10 A.M, and ward visits at 2 P M

NATIONAL HOSPITAL Queen square W C

Monday Feb 8th —3 30 P M, Dr Symonds Cerebral Tumours (II)

Tuesday —3 30 P M Dr Carmichael Muscular Dystrophy and Dysfunction

Wednesday —3 30 P M. Dr Kinnier Wilson Clinical Demonstration

Thursday —3 30 P.M Mr Jefferson Spinal Injuries

Friday —3 30 P M, Dr Denny Brown The Motor Cortex.

Out patient clinic daily at 2 P M

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL Gray's Inn road W C

Friday, Feb 12th —4 P.M Mr W A Mill Earache in the Normal Ear

LONDON SCHOOL OF DERMATOLOGY, 5 Lisle-street W C

Tuesday Feb 9th —5 P.M Dr H T Barron: Common Skin Diseases in Childhood

Wednesday —5 P M, Dr I Muende Histopathology of Some Common Skin Diseases

Thursday —5 P M Dr G B M. Heggs Some Affections of the Skin of the Foot

NATIONAL HOSPITAL FOR DISEASES OF THE HEART Westmoreland street, W

Tuesday Feb 9th —5 30 P M, Dr B T Parsons Smith Angina Pectoris

SOUTH WEST LONDON POST GRADUATE ASSOCIATION St. James Hospital Ouseley road, S W

Wednesday *Feb 10th* —4 P M, Mr J G Yates Bell Prostatic Obstruction

ST JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE Ranelagh road S W

Friday, Feb 12th —4 30 P M Dr Albert Eidinow The Indications for Light Therapy in the Rheumatic Diseases

LEEDS GENERAL INFIRMARY

Tuesday, Feb 9th —3 30 P M Mr Symons Demonstration of Surgical Cases

ANCOATS HOSPITAL, Manchester

Thursday, Feb 11th —4 15 P M. Clinical Meeting

ST MARY'S HOSPITALS, Manchester

Thursday Feb 11th.—4 15 P M. (Whitworth street West Hospital), Dr E A. Gerrard Hæmorrhage Complicating Pregnancy and Labour

GLASGOW POST GRADUATE MEDICAL ASSOCIATION

Wednesday, Feb 10th —4 15 P M (Royal Samaritan Hospital for Women) Dr Donald McIntyre Gynæcological Cases

Appointments

Oran B S, M D Aberd F R C.S Edin, has been appointed Surgical Officer and Superintendent at the Belford Hospital, Fort William

Gilpin A., M D, M R C P Lond Consulting Physician to the King Edward Memorial Hospital, Ealing

Hawksley J C M D, M R C P Lond, Consulting Physician to the King Edward Memorial Hospital, Ealing

Lewis, R S, B A Camb F R C S Eng Hon Surgical Registrar to the Royal Waterloo Hospital

Ralphs, F G, M B Manch, F.R.C S Edin, H M Coroner County of Lancaster

Stuhl, F J E M A Camb L R C P Lond, Junior Male Assistant Medical Officer at the Birmingham City Mental Hospital

Tennent, Thomas M.D Glasg M R.C P Lond D.P H D.P.M Assistant Physician in Psychological Medicine to King's College Hospital

Certifying Surgeons under the Factory and Workshop Acts Dr P Campbell (East Kilbride District, Lanark) Dr E M E Cumming (Glasgow, West District, Lanark) and Dr N Pick (Barnsley District, Yorks W R)

Births, Marriages, and Deaths

BIRTHS

Bryan —On Jan 29th at St George's-square S W, the wife of Dr T B L Bryan of a son

Buxton —On Jan 18th at West Bitchfield, Belsay, Northumberland the wife of R J Buxton, B Chir, D O M.S, of a daughter

McGregor —On Jan 27th the wife of Dr H G McGregor of Worthing of a daughter

Pegg —On Jan 17th at Calcutta, the wife of Mr A D Pegg, F R.C S of a son

Vaughan Payne —On Jan 28th 1937 the wife of R Vaughan Payne M Ch F R.C S of Windsor, of a daughter

MARRIAGES

Beynon—Taylor.—On Jan 23rd at Dunkeld Cathedral Dr Lewis John Beynon to Constance Lang second daughter of Dr J A Taylor of Dunkeld

Ellis—Robinson —On Jan 28th in London Valentine Herbert Ellis, F R C S Eng, to Angela Peart Robinson

DEATHS

Davy —On Jan. 31st at Corringham road Golders Green, N W, Rose Lilian Humphrey Davy, M B Lond, D.P H

Holt —On Jan 31st at Bournemouth Henry Holt, M.D Leeds of Bournemouth late of Stockport.

Schacht —On Jan 21st, at Winscombe Somerset, Franc Frederic Schacht M D Camb aged 80

Sommerville —On Jan 30th David Sommerville M D Bell., M R C P Lond, of Caterham, aged 74

Thorburn —On Jan 27th at Peshawar N W F P, Colonel Harold Hay Thorburn, C I E M B Edin I.M.S aged 51

Vine —On Jan 29th A Bertram Vine M B E, M B Lond., of Bury

N B —A fee of 7s 6d is charged for the insertion of Notices of Births Marriages and Deaths

NOTES, COMMENTS, AND ABSTRACTS

THE FUTURE STATUS OF THE CLINICAL PATHOLOGIST *

BY S C DYKE D M. F R C.P

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THE declared and avowed clinical pathologist is a comparatively recent entrant into the field of medicine in this country I suppose that in the whole of Great Britain and Ireland there are not more than 250 medical men and women who would regard themselves as falling within the category The number is growing and seems likely to continue to do so the time is ripe for a consideration of the sphere of the clinical pathologist, of the sort of training required to fit him for his work, and of his status in relation to his fellow medical practitioners

Clinical pathology may be defined as the application of pathology and of the methods of pathology to clinical medicine Time was when all pathology was more or less clinical and many of the founders of British medicine might be described as clinical pathologists Bright Addison Hunter Gull and Sutton and many others fall within the terms of the definition. But since the days of the giants of old a gulf has opened between clinical medicine and pathology Some pathologists have tended to pursue the study of their subject for its own sake and without reference to clinical medicine and some clinicians have shown a reluctance—often amounting to a positive aversion—to admit the application of the methods of pathology to clinical medicine

As an example, incredible though it may sound I lately heard an eminent physician address an audience of medical men and women for a full hour and a half on the subject of obscure pyrexia without once making mention of any laboratory method. Even in the diagnosis of coliform infection of the urinary tract his recommended methods of investigation did not pass beyond the observation of smell and naked-eye appearance of the urine

THE CLINICAL PATHOLOGIST AS SPECIALIST

It is the aim of clinical pathology to enlarge and extend the boundaries of clinical observation beyond those attainable by the unaided senses In its own sphere it endeavours to introduce scientific precision into medicine The question whether or not medicine is a science has on occasion served as a subject of rather futile debate In so far as it is founded upon a body of reasoned knowledge and systematised experience it is a science The reasoning upon which some of of our present day medical practice is based will probably not for ever appear sound and its supposed fundamentals will require alteration and amendment but this is a state of affairs common to all sciences even the mathematical the principles of which not so long ago appeared to be immutably fixed for all time to come.

So far as medicine is a science it is founded upon physiology and upon pathology which is morbid physiology The sphere of clinical pathology is the practice and pursuit of pathology and therefore of physiology in so far as they come into contact with clinical medicine. The extent to which they will so come into contact must increase with the progressive establishment of medicine upon the basis of science

But pathology and physiology form a large part of the medical curriculum and are common ground to all those who endeavour to practise medicine in a spirit of other than pure empiricism. Something more than a knowledge and appreciation of the relation of these subjects to clinical medicine is necessary for the clinical pathologist. Not only must he know the theory but he must in addition have full mastery of the technique of his subject that technique is largely that of the laboratory

It is the existence of this technique which makes it necessary to regard clinical pathology as a special branch of medicine. Whether its practitioners should rightly be regarded as specialists is a matter of no great moment. The best definition of this much abused term with which I am acquainted I heard from Sir Cuthbert Wallace it was if I remember rightly to the effect that only those should be regarded as specialists who have the mastery of some special technique. In the case of the clinical pathologist the technique is that of the laboratory and he falls within the terms of the definition

A mastery of laboratory technique is neither easily nor quickly acquired. In certain teaching schools the belief appears to prevail that by virtue of a short course of tuition in laboratory methods the student will after qualification be in a position to apply for himself and upon his own patients the methods of laboratory diagnosis Personally I believe this to be a fallacy and the time spent in instructing the medical student in the technique of laboratory methods to be largely wasted. It is essential that the medical man have a general idea of the nature and scope of these methods in the study of disease that he should understand their practical applications in diagnosis and in particular that he should harbour a lively sense of their limitations in that field. The most assiduous application over a few months to a course of instruction practical and otherwise cannot however make a medical student into a skilled laboratory worker—much less endow him with a full knowledge of the application and interpretation of the results of diagnostic laboratory work Furthermore few medical men engaged in clinical practice have the time to devote themselves personally to the application of any but the simplest laboratory methods to their own cases. That this is so is probably not all to the bad. Could and would every medical man study his own cases in his own laboratory it would undoubtedly add interest to practice just as interest is added to that practice in which the practitioner is his own surgeon But by common consent such an arrangement is not always in the best interests of the patient The same I believe to apply to clinical pathology

The technique of the diagnostic laboratory is the special field of the clinical pathologist and the laboratory must play a large part in his training The medical student who is drawn to the practice of this specialty will almost certainly have paid particular attention to physiology and will have more than a speaking acquaintance with the technique of that science A thorough grounding in the technique of physiology will carry him far in the clinical pathological laboratory The technique of biochemistry and histology will present little unfamiliar that of bacteriology and serology will not be entirely strange

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* Presidential address to the Association of Clinical Pathologists on Jan 29th

I think that the ideal department for the training of the clinical pathologist is that in which all the laboratory diagnostic work and the post mortem service of a general hospital is conducted under one head, in such a department the danger of undue specialisation on any one branch is easily avoided, this is not so easy in larger institutions in which specialisation has led to the formation of separate and distinct departments, but even in the face of such departmentalisation coördination can be and often is maintained.

THE CLINICAL PATHOLOGIST AS CLINICIAN

It is his mastery of his special technique that is the excuse for the existence of the clinical pathologist Also it is essential that he be more than a mere specialist The dangers of "narrow specialisation" in all branches of medicine are now so widely apparent that it is not necessary to dilate upon them If he is to fill his proper sphere the clinical pathologist must by all means avoid these dangers A thorough acquaintance with clinical medicine is as necessary to him as it is to the surgeon, the cardiologist, the ophthalmologist, or the practitioner in any other special branch of medicine Clinical pathology has no place for the pure laboratory bench worker He has a place and a very honoured place in other branches of pathology, but clinical pathology is only partly a matter of the laboratory bench, equally it has its place in the wards and at the bedside

Without a thorough knowledge of the problems of clinical medicine the clinical pathologist is in no position to fulfil the whole of his function and such knowledge is only to be acquired in the wards His place is not wholly in the laboratory, and routine work at the bench is not his business, he must himself have performed and be thoroughly familiar with every detail of all procedures carried out in his laboratory, unless he has done so he is in no position to supervise their performance by others Routine work can, however, equally well be done by skilled laboratory technicians and is a waste of the time of the experienced clinical pathologist His business as the head of his department is its direction and supervision And that is not the whole of his business

It is further his part to see that his department is used to the fullest and best advantage of the community which it serves, be that community a hospital, a congerie of medical men, or both The capacity to do this demands more than skill and experience in laboratory work The clinical pathologist must be able to act as a guide to the uses of his own department and to the interpretation of the results obtained in it To act as a guide he must know the geography of the avenues of approach most likely to lead to the solution of any given diagnostic problem Such knowledge comes only from acquaintance with the natural history of disease, without such knowledge the clinical pathologist will be but a blind guide That he may be able to deal with this aspect of his work it is essential that in addition to his special skill and experience in laboratory technique he possess a full knowledge of clinical medicine, the wards as well as the laboratory must constitute his training ground

My own training was acquired in the wards and the laboratories of the clinical units of St Thomas's Hospital, in my present department at The Royal Hospital, Wolverhampton, it has been my endeavour to carry on the spirit which animated the units in my time At The Royal Hospital the assistant pathologist fills also the post of resident medical officer and is charged with maintaining the closest possible liaison between the laboratory and the wards The arrangement works well so far as the laboratory is concerned, from the approval which it has gained from my colleagues on the honorary staff I believe it to be advantageous to the clinical work of the hospital and from the comments of those who have held the joint post I believe it to provide a satisfying though far from an easy life

Some such combined post is, I think, ideal for the training of the clinical pathologist By placing in the hands of the same observer the supervision both in the wards and in the laboratory of the investigation of any given case it affords the fullest opportunity for the intelligent correlation of ward and laboratory findings, in the capacity of assistant pathologist the holder of the post will perform or assist at all post mortem examinations and is thus afforded the opportunity of verifying (or otherwise) deductions from findings during life Clinical observations, laboratory data, and post mortem findings are checked against each other by the same person and all in the same department In this way an accuracy, a continuity, and a completeness of observation can be applied to the study of any given case which would I think have satisfied the ideal of my first master in medicine, the late Sir William Osler

Given a well equipped and properly staffed pathological department I believe such a post as outlined to afford the best possible training ground for the clinical pathologist Furthermore, by assuring so far as is humanly possible the full and proper use of the diagnostic facilities of the laboratory it is manifestly advantageous to the clinical work of the hospital.

The University of London some years ago, largely at the instance of the Association of Clinical Pathologists, established a diploma in clinical pathology This diploma will in future serve as the mark of the trained clinical pathologist and the time may well come when its possession will be as essential to the candidate for the post of hospital pathologist as that of the "fellowship" is for the aspirant to a place on the surgical staff As evidence, however, of his capacity to take his proper place and to fulfil his rôle in his own medical community, the complete clinical pathologist will wish also to possess some one of the higher post graduate distinctions in clinical medicine

Thus trained and equipped he will be in a position to fill his proper sphere In order that the fullest and most advantageous use be made of his special skill and knowledge it is essential that along with his fellow specialists in other branches of medicine he takes his place both in the counsels of the institution to which he is attached and in consultation at the bedside as well as in the laboratories

PATIENT OR MATERIAL FROM PATIENT?

Lord Horder recently spoke of the clinical pathologist as substituting for the study of the patient "qua patient" that of "material derived from the patient" I hope I have made it clear that this is diametrically opposed to the view of their subject held by its own practitioners The clinical pathologist does indeed study material derived from the patient and brings to that study the aid of a special technique, to him, however, his laboratory findings form only a part of the pattern of the case and he realises that unless considered in their proper relationship to the whole picture they may be of little value, sometimes worthless and not rarely actually misleading.

It is not as a rule the clinical pathologist who draws diagnostic deductions from the recovery on culture of organisms from an otherwise normal urine or who diagnoses typhoid fever from a positive Widal reaction without reference to titre or the general state of the patient it is not he who orders a vaccine made up from the normal fauna and flora of the fauces or bowel, nor is it he who will administer it But in all these things and more he may and does see his work misapplied and his name taken in vain

It used to be the fashion to speak of pathology as a science ancillary to medicine and there was at one time a tendency to treat its practitioners not so much as hand maidens as general drudges to the lords of medicine Our first president, the late Prof C Powell White throughout his working life fought both with tongue and pen against this attitude If clinical pathology is ancillary to medicine it is ancillary in the same way and to the same degree as any other special branch is ancillary to medicine as a whole. Clinical pathology has its own contribution to make towards and its own part to play in the entelechy of medicine It is the business of the members of the Association of Clinical Pathologists to see to it that its contribution is made fully and its part effectively played

A PSYCHOTHERAPIST S TRAINING

In his presidential address delivered to the British Psychological Society (Medical Section) on Jan 27th Dr H. Crichton Miller prefaced his remarks on the Frontiers of Psychotherapy by reviewing his own professional experience from which the contribution he proposed to make from the presidential chair was derived He proceeded In another place I have expressed my belief that it would be for the good of all concerned if by a Utopian scheme of medical education and practice we could have a probationary period in general practice of say five years, after qualification and before specialising in psychotherapy The ten years that I spent in general practice taught me many things that I would not have learned otherwise and taught me much that is not being taught to the aspiring psychotherapist of to-day We are all aware of the danger of narrowness in any specialised department of treatment these dangers are essentially psychological in character if we psychologists are content to live and practise in blinkers, we are *in no position* to point out to others the restriction of their field of vision.

The second element in my experience to which I owe much is that I have worked for over a quarter of a century in a nursing home which I started solely for the treatment of psychoneurotics There I have seen various psychotherapeutic techniques in operation under favourable conditions There I have seen the intangible effects of atmosphere, a therapeutic agent as elusive as vitamins and hardly less essential There I have been able to evaluate the results of thorough physical treatment on a scale that I can look back on without shame There finally I have learned how impossible it is to manufacture a psychological nurse and how deplorably low is the birth rate of this breed

The third element to which I owe much is professional work in the war And no one could go through those years without learning lessons about repression and valour, stupidity and vanity not to mention other aspects of the human psyche

The fourth element which has enriched my professional experience is the Institute of Medical Psychology which I started in 1020 as the Tavistock Clinic For 13 years I acted as director and during that time we passed through the lean years of psychotherapy—say 1925–30 when professional approval was still grudging and the Mayfair vogue had waned In those 13 years I had unusual opportunities of *observing the frontier activities* of psychotherapy with general practice with psychiatry with education and with religion Furthermore I was in a position to observe and assess the therapeutic value of a considerable number of junior colleagues In this connexion I recall certain painful conversations in which I was reluctantly obliged to point out to a zealous aspirant that he or she—as the case might be—was not sufficiently promising to begin or not sufficiently successful to continue to work with us Of the victims of what the modern undergraduate would call sadistic dictatorship some have reverted to general medicine without bearing me any malice some clearly cherish resentment to this day and one—after a lapse of ten years—has forgiven me by reason of a Group Movement conversion From this last instance I deduce and would have you deduce that the particular brand of religion referred to can achieve for some readjustments that cannot otherwise be attained. There were other victims of autocratic direction who refused to be discouraged by so undiscerning a judgment They flourish in various *other departments and schools of psycho*therapy where training is more important than a high I.Q The Clinic taught me more than I ever learned in private practice of the attitude of the general practitioner and particularly of the panel doctor towards psychotherapy On this frontier as some of you have also learned there was a strong tendency to regard psychotherapy as a form of magic This has great inconveniences—particularly for the *magician But in the last few years the practitioner's* outlook has improved immensely and it is reasonable to suppose that it will continue to improve At the Clinic as in the nursing home one saw a variety of psychotherapeutic methods in action. The only difference was that they were being applied in unfavourable conditions as opposed to the favourable conditions of the nursing home The problem of institutional versus ambulant treatment is one that *for the most part is settled by circumstances* most psychotherapists are working either in or outside an institution Therefore all their patients tend to be treated on the one basis or on the other The psycho-analyst is inevitably bound to a method of treatment from which *coöperation* with the environment is excluded But my experience has taught me that far more skilful and frequent use should be made of environment as an adjuvant of treatment by *those psychotherapists who are free* to do so

Such then have been the peculiarly valuable experiences that have fallen to my professional lot I feel looking back, as if I had been for 30 years a professional waste-paper basket And if such a receptacle *is endowed with ears,* eyes and memory even of second or third rate quality it is bound to register some very interesting observations Not the least interesting is the opportunity *of observing* the activities of the fellow or fellows who treated the patient before he was relegated to the waste-paper basket Through these opportunities I have learned much that is admirable of many of my colleagues and of others certain things that make me feel impatient and indignant But of this I am very convinced that the medical men and women who in any capacity treat functional cases lack nothing in heart however limited they may be in head Indeed their compassion is too often exploited by the malingerer and if they appear impatient with anxiety cases it is only because they are unable to understand them.

I would not wish to close the list of my professional opportunities without referring to one which lies on the frontier of psychotherapy I refer to the principles and discipline in child guidance that are associated with parenthood or shall we say [illegible] The matter is not merely of social significance Now that parenthood is becoming almost pathological in its infrequency, the psychotherapist has to deal increasingly with the products of the small family and its implications But he himself has foregone an education to reality which only the cast-iron narcissism of the Victorian era could resist The more I see of modern child guidance the more I see it reverting to those basic principles on which all good nurseries and all happy families have been conducted To have shared in this family experience, whether as child or parent, appears to me to have been a particular privilege for any psychotherapist

The main part of this address, which will appear in full in the *Journal of Medical Psychology*, was devoted to a discussion of neurology, physiology, sociology, philosophy, and religion as frontiers of psychotherapy

OPEN-AIR SCHOOLS

TWO activities of the Save the Children Fund (20, Gordon-square, London, W C 1) mentioned in its seventeenth annual report deserve mention For ten years now the Fund has maintained at Broadstairs an open-air residential school with accommodation for 52 girls, aged from 5 to 15 years They spend three months each at Fairfield House, putting on 6 to 10 lb in weight and doing "just so much school work as is necessary" Of the children 72 have come at the charge of local education authorities but free places have been provided for 87 children from various parts of the home counties It is three years since the Fund began to equip non-residential nursery schools, and seven of these are now running with official recognition from the Board of Education They are located as follows —Tyneside Byker (Newcastle), North Shields, Sunderland, Tees-side Middlesbrough, West Riding Leeds, South Wales Dowlais (Merthyr Tydfil), Brynmawr Recently the schools at Middlesbrough and North Shields have been enlarged, and plans passed for a new school at Hebburn The one school still unrecognised by the Board is at Hoxton, where the school is sound enough but the premises are not up to the mark. The Fund has also given assistance to nine other nursery schools—namely, at Louth, Lincoln, Rochdale, Balham (London), Kentish Town (London), Harrow, Niddrie (Edinburgh), and Methil (Fifeshire) The report records the change in colour of the children from greyish-yellow to the normal pink and brown, and suggests that the children stimulate their mothers to adopt nursery-school standards at home

MUNICIPAL YEAR BOOK.—This valuable year book [1] has undergone several changes in its format since the last edition The directory of national and local authorities which hitherto preceded the general sections now occupies the second part of the book, and this has made necessary some rearrangement in the general sections The book is a faithful chronicle of the developments and achievements of the past year and an encyclopædia of knowledge of local government administration Its appearance this year in January instead of in March is very welcome

CORRIGENDUM.—The reference in a leading article last week (p 274) to a paper by Stamp and Hendry, published in the same issue, should have been to Dr T C Stamp and Mr Edward Hendry, Ph D

Vacancies

For further information refer to the advertisement columns

Accrington Victoria Hosp—H.S, £150
Basingstoke Park Prewett Mental Hosp—Deputy Med Supt, £600
Bath, Royal United Hosp—H S for Ear Nose and Throat Dept at rate of £150
Birmingham Ear and Throat Hosp—First H.S at rate of £150
Birmingham, Little Bromwich Hosp for Infectious Diseases—Jun Res M O, £300
Birmingham St Chad's Hosp—Jun Res M O, at rate of £150
Brighton, Royal Sussex County Hosp—Hon Med Registrar
Bristol Frenchay Park Children's Orthopædic Hosp and Sanatorium—Res M O at rate of £250
British College of Obstetricians and Gynæcologists, 58, Queen Anne street, W—Res Librarian £400
Bury County Borough—Deputy M O.H £750
Central London Throat, Nose, and Ear Hosp, Gray's Inn road W C—Res H.S, at rate of £75
Cheltenham General and Eye Hosps—H P, £150
Chester Royal Infirmary—Two H S s, H S, and H P each £150
Chichester, Royal West Sussex Hosp—Jun H.S, £125
Colonial Medical Service—Thirty Vacancies, £600–£700
Derby Bretby Hall Orthopædic Hosp—Jun Res Asst. M O £350
Derbyshire Education Committee.—Asst School M O, £500
Dewsbury and District General Infirmary—Second H.S £150
East Ham Memorial Hosp Shrewsbury road, E—Physician for Skin Dept.
East Sussex County Mental Hosp Hellingly—Sen Asst. M O., £550
Home Office, Children's Branch—Medical Inspector, £738
Hosp for Diseases of the Skin Blackfriars, S E—Additional Member for Hon Staff
Ilford King George Hosp—Hon Physician
Italian Hosp Queen square W C—H S, at rate of £100
Kingston upon Thames Surrey County Mental Hosp—Deputy Med Supt., £720
Liverpool Alder Hey Hosp—Res Asst. M O 's each £200
Liverpool and District Hosp for Diseases of the Heart—H P, £100
L C C—Asst M O 's, Grade I and II, £350 and £250 respectively Also Psychiatric Social Worker £235–£12 10s–£310
London Hosp E—First Asst to Ophth. Dept
Maidenhead Hosp, Berkshire.—Hon Surgeon
Maidstone, West Kent General Hosp—H.P, £175
Manchester Ancoats Hosp—H S, at rate of £100
Manchester Christie Hosp and Holt Radium Institute Withington—Asst Director £1000
Manchester, Crumpsall Hosp—Res Asst M O, at rate of £200
Middlesex Hosp and Medical School W—Jun Med Reg, £300
Millwall (Isle of Dogs) School Treatment Centre, E—Ophthalmic Surgeon £80
Newcastle General Hosp—Venereal Diseases Clinic M O, £800
Newcastle on Tyne Wooley Sanatorium near Hexham.—Asst. M O £350
Northampton Mental Hosp Berrywood—Third Asst M O, £450
North China Missionary Hosp—Medical Man
Norwich, Norfolk and Norwich Hosp—H S to Special Depts., £120
Nottingham General Hosp—H S for Fracture and Orthopædic Depts £300
Oxford, Radcliffe Infirmary—Asst Clin Pathologist, £600
Pembrokeshire County War Memorial Hosp Haverfordwest—Res H S., £200
Plymouth, Prince of Wales's Hosp Devonport—H.S at rate of £150 Jun H S and Res Anæsthetist and H.S to Special Depts, each at rate of £120 Also Sen H.S. at rate of £130
Portsmouth Royal Hosp—Cas O and H P each at rate of £150
Preston Biddulph Grange Orthopædic Hosp—Jun H.S, at rate of £200
Princess Louise Kensington Hosp for Children St Quintin avenue W—H P at rate of £120–£150
Queen Charlotte's Maternity Hosp Marylebone road N W—Res Anæsthetist at rate of £100 Res Anæsthetist and Dist M O, at rate of £90 Also Asst Res M O, £80
Queen Mary's Hosp for the East End, E—Hon Asst. Physician to Psychological Medicine Dept
Reading Royal Berkshire Hosp—Res Anæsthetist, £250
Rochdale Birch Hill Hosp—Jun Res M O, at rate of £225
Rochdale Infirmary and Dispensary—Sen H S, £250 Also Second H S and H P each £150
Rotherham Hosp—Cas H S £150
Royal Cancer Hosp Fulham road S W—H.S to Radium Dept at rate of £100
Royal Naval Medical Service—Vacancies for M O s
Ryde, Royal Isle of Wight County Hospital—Jun H.S £120
St Bartholomew's Hosp E C—Physician Asst Surgeon to Orthopædic Dept Neurologist Dental H S at rate of £80 Asst Dental Surgeon Also Chief Asst to Dental Dept
St George's Hosp, S W—Res M O for Convalescent Branch, at rate of £300
St John's Hosp for Diseases of the Skin, Leicester-square, W C—Out patient and In patient Med Registrars, each £50
St John's Hosp Lewisham S E—Res H P and Cas O, each at rate of £100
Sheffield Jessop Hosp for Women—H S at rate of £100
South London Hosp for Women Clapham Common S W—H P at rate of £100
Stockport County Borough—Sen Asst M O.H and Clin Tuber O £750
Sutton and Cheam Hosp—Sen and Jun Res M O 's, at rate of £150 and £100 respectively
Truro Royal Cornwall Infirmary—H.S £170
West Hartlepool Cameron Hosp—H S, £150
West London Hosp Hammersmith W—Asst Pathologist, £300
Wolverhampton Royal Hosp—H S at rate of £100
Woolwich and District War Memorial Hosp Shooters Hill, S.E—Res M O £175 Also H S at rate of £100
Worcester County and City Mental Hosp, Powick—Asst. M O £350

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Ely (Cambs)

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[1] The Municipal Year Book 1937 Edited by James Forbes London The Municipal Journal Ltd Pp 1594 30s

ADDRESSES AND ORIGINAL ARTICLES

ANORExIA NERVOSA

WITH SPECIAL REFERENCE TO THE PHYSICAL CONSTITUTION*

BY J H SHELDON M D F R.C.P Lond
HON PHYSICIAN THE ROYAL HOSPITAL, WOLVERHAMPTON AND THE GUEST HOSPITAL, DUDLEY

IT is certainly necessary that diseases should be named, but this entails one disadvantage The title chosen in the first instance is apt to be given on account of a prominent symptom and it directs our clinical appreciation of a case primarily towards this particular feature Unconsciously we tend to regard aspects of the disease which are not suggested by the title as being either derivative or of secondary importance even though they may be as constant as the symptom which happens to give its name to the disease Once a descriptive name has been attached, a channel is provided along which the mind finds it all too easy to flow

Anorexia nervosa is a good instance of this The name itself is a sound one and no complaints are levelled on that score Anorexia is far and away the most prominent symptom and all are agreed that the adjective nervosa is correct in its implication that the origin of the disease lies in the realm of mind The interest of the disease is however by no means limited to those two features In particular the study of five cases under my own care combined with a search of the literature suggests that a proportion of the patients have some degree of pituitary abnormality

Five Case Records

CASE 1 —Miss A aged 18 was seen in consultation on Oct 20th 1935 She had been well until the previous August, after which she had sudden amenorrhœa, menstruation having been previously regular from the age of 12 Shortly afterwards in September 1935 it was noticed that her appetite was failing, and the failure became rapidly progressive until the anorexia was almost total. She was a small girl her height being only 4 ft 10 in and when seen was in a state of severe emaciation the weight being reduced from 6 st to 3 st 13½ lb The breasts relatively escaped and their rounded contour provided a striking contrast to the extreme emaciation of the rest of the body Physical examination was negative except for slight pallor of the discs (cf Fenwick 1880 Case 4) and well-marked hirsuties The limbs and trunk were covered with a dark downy hair while the hair of the axillæ and pubis was abnormally luxuriant The latter tended to stray upwards towards the umbilicus in the masculine distribution. The mother told me that since a child she had been renowned in the family for her hairiness The general picture was very suggestive of anorexia nervosa but the small stature slight pallor of the discs, hirsuties and the fact that amenorrhœa had preceded the anorexia suggested a doubt lest the case might be one of pituitary cachexia and she was accordingly removed to a nursing home for investigation

(1) Radiography of the skull showed a small and shallow pituitary fossa (2) The basal metabolism was greatly depressed An exact estimation was difficult owing to the easy exhaustion of the patient but the readings varied between minus 20 per cent and minus 32 per cent (3) Blood count urine and fæces were normal (4) A blood-sugar curve gave an almost straight line The initial level was 0 106 per cent and the half hourly readings after taking 50 grammes of glucose were 0·103 0·093 0 093 0 112, and 0 11[illegible] per cent Taken with the other clinical features, these findings appeared to support the suggestion of pituitary disease On the other hand the patient s behaviour under observation and her almost complete refusal of food were typical of anorexia nervosa.

She was seen in consultation by a psychologist Dr J Hammond of Wolverhampton who accepted her from his point of view as a typical anorexia nervosa and also by Prof L G Parsons of Birmingham who considered there was sufficient evidence to suggest a diagnosis of Simmonds s disease A decision as to the most suitable line of treatment was not easy but in order not to confuse matters it was decided to initiate psychological treatment only which was carried out by Dr Hammond. On this the patient regained her appetite making a slow but uninterrupted recovery and on discharge from the home at Christmas 1935 she had gained exactly 1 st in weight Since then she has continued in perfect health, and has returned to her old weight of 6 st But though for nearly a year her nutrition has been perfect the amenorrhœa has persisted and her hirsuties and small stature are unchanged

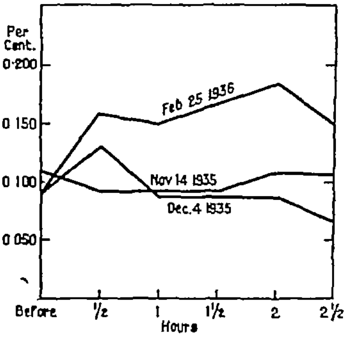

FIG 1.—Blood-sugar curves in Case 1
(Test dose = 50 g. glucose)

Parallel to the improvement in the general condition there was a change in the blood sugar curve On Dec 4th 1935 the starvation level was 0·081 per cent and after 50 g glucose the half hourly readings were 0·131 0 086 0·086 0·086 and 0·068 per cent The curve was therefore still a flat one except for the initial rise On Feb 25th, 1936 the starvation level was 0 086 per cent and after 50 g glucose the half hourly readings were 0 158 0·150 0 168 0 181 and 0·150 per cent These are shown in Fig 1

Here therefore is a case which from its recovery under psychological treatment alone must be regarded as one of anorexia nervosa, but which appears unusual because the anorexia was in a sense an incident in a preceding and still persisting amenorrhœa and also because the patient s small stature small pituitary fossa hirsuties and flat glucose-tolerance curve combined strongly to suggest pituitary disease I now believe that the presence of physical features suggesting an underlying pituitary anomaly is by no means uncommon

CASE 2.—Miss B aged 23 was seen on Nov 25th 193[illegible] through the courtesy of Dr Hammond Menstruation had begun at the age of 16 and after its onset the periods were irregular with 2–3 months interval between them though the loss was normal From the age of 14 she had suffered from periodic headaches lasting a day at a time felt mainly behind the eyes and accompanied by photophobia The anorexia began at the age of 18½ in 1931 and her last period occurred two months before this The anorexia lasted until the middle of 1933, when its true nature being recognised it responded rapidly to psychological treatment During the illness her weight fell to 5 st, but when she was seen by me it had risen to just over 9 st Menstruation returned at Christmas, 1933, some months later than recovery from the anorexia, and then somewhat changed in character, the periods being now quite regular but scanty in amount There was no hirsuties and the growth of hair was normal

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* Abridged from a lecture delivered to the Osler Society University of Oxford, on Nov [illegible]th 1936

This is a case in which anorexia nervosa developed in a patient whose menstrual functions were somewhat late in appearance, and irregular when established Amenorrhœa preceded the anorexia, but with recovery from the anorexia menstruation has become regular

CASE 3 —Miss C, aged 35, has suffered from anorexia for many years At first her refusal of food appears to have been absolute, but as with many of these cases where neither recovery nor death has occurred, she has now passed into a state of chronic starvation, eating only just enough to keep body and soul together There was severe emaciation in which, however, the breasts did not proportionately share, being rounded and resembling those of a young girl The axillary hair was entirely lacking and the pubic hair was scanty and definitely subnormal in amount for a woman of her age Menstruation had begun at a normal age but from its onset there had been extremely severe dysmenorrhœa, which having resisted all treatment was eventually treated by hysterectomy The uterus was found to be infantile

This is a case of chronic anorexia nervosa in which the dysmenorrhœa associated with an infantile uterus and the maldevelopment of the sexual hair all suggest a constitutional pituitary weakness (It may be added that all attempts to help this patient proved futile, since she declined to leave her home, and was encouraged in this attitude by her mother, and in the relations existing between these two an adequate psychological causation for the anorexia was apparent)

CASE 4 —Woman aged 23 There was a family history of mental disease It appears that shortly before April, 1933, she had become "peckish" and "finicking" about her food, but this had caused no anxiety, and the family did not think that anything was wrong with her until April, 1933, when menstruation ceased Soon afterwards her capricious appetite changed to anorexia, which has persisted and passed into a chronic state of semi starvation, the weight being reduced to 5 st 10 lb No abnormalities were found on physical examination, and the growth of hair was normal Radiography of the skull showed a small pituitary fossa A glucose tolerance test gave a fasting level of 0 66 per cent, with half hourly readings after 50 g of glucose of 0 181, 0 222, 0 200, and 0 181 per cent (I am indebted to Dr G C Sheldon of Reigate for the opportunity of seeing this case)

CASE 5 —Miss D, aged 16, was admitted to the Royal Hospital, Wolverhampton, on Jan 9th, 1936, because of wasting and loss of appetite She was a small under developed girl, whose height was under 5 ft and whose weight was 4 st 2½ lb For some months she had been slowly losing her appetite, and for the last four weeks the anorexia had been almost complete There was no diminution in her daily activities, however, indeed the mother told me that she would manage a whole day's work in the factory (screwing nuts on to bolts) on a small piece of bread for breakfast and a small glass of milk at night With a hospital atmosphere and encouragement from the ward sister the anorexia rapidly ceased, and she began to put on weight but unfortunately before recovery was complete she developed signs of tuberculosis and had to be discharged to a sanatorium Physically infantile, she showed no signs of puberty Menstruation had not begun there was no development of hair either in the axillæ or pubis, and the breasts were only just noticeable Radiography of the skull showed a wide but shallow pituitary fossa B M R =plus 10 4 per cent Blood sugar curve on Jan 10th, 1936, gave a resting level of 0 118 per cent, and after taking 50 g of glucose the half hourly readings were 0 112, 0 118, 0 131, 0 125, and 0 118 per cent —a flat curve like that found in Case 1 On Feb 5th, when her appetite had recovered, the curve was of different type The resting level was 0·086 per cent, and the half hourly readings thereafter were 0 187, 0 200, 0 200, 0 181, and 0 168 per cent These are shown in Fig 2 (I am indebted to Dr S C Dyke, hon pathologist to the Royal Hospital, Wolverhampton, for the laboratory reports in Cases 1 and 5)

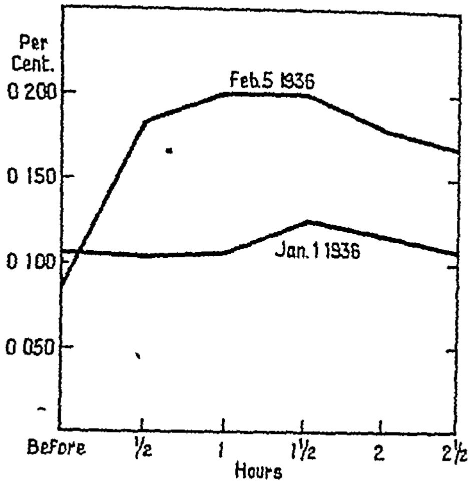

FIG 2.—*Blood-sugar curves in Case 5*

Discussion

Of these five patients, two (1 and 5) showed clear evidence of pituitary dysfunction, while in two others (2 and 3) this was presumptive (irregular menstruation and headaches in one case and an infantile uterus in the other) It is possible therefore that there is a special type of body mind which is peculiarly apt to develop anorexia nervosa in response to emotional difficulty The presence of a constitutional factor is also suggested by the contrast between the extremely clear-cut clinical features and the much more diffuse psychological background. Published records contain a surprising number of observations of the same general import, which may now be discussed in detail

PHYSICAL CHARACTERISTICS

1 *Height* —Two of my patients were under 5 ft in height The literature contains no specific statements on this point, and it is certain that the disease may affect persons of all heights Venables (1930) notes that in two of his patients (males) the height was of the order of 6 ft Lockhart Stephens's patient was 5 ft 4 in Heights are recorded by some of the French authors, especially Noguès (1913), and in nine instances varied between 1 45 m and 1 70 m with an average of 1 60 m (5 ft 2 in) Ryle in his Schorstein lecture (1936) refers to 12 cases Of these one was stated to be "small" and two were described as "diminutive" The available evidence allows of no definite statement, but rather suggests that in this disease there may be a significantly greater proportion of individuals with small stature than in the general population In connexion with growth, there is one remarkable French case which deserves resuscitation

Noguès (Case 13) —A woman who was 24 when she came under the author's care She had begun to men struate at the age of 13 but after two or three months the periods had ceased until the age of 20 The cessation was ascribed to the fact that at the time of onset of the periods she had grown rapidly and it was thought she had exhausted her strength At the age of 20 her height was 1 m. 60 cm In May 1900 (age 20) her periods reappeared and after several days of lassitude and irritability it was noticed that she had suddenly grown. Measurements showed that she had grown 3 cm (a little more than 1 in.) in fifteen days After this rapid growth the periods ceased again the next month Anorexia developed soon afterwards

After a long period of dormancy this sudden activity of both the sex and growth hormones of the anterior pituitary is remarkable and perhaps not less remarkable is the fact that the same patient was afterwards the subject of anorexia nervosa

2 This failure of growth is paralleled in some cases by failure of *sexual development* though it is rare for this to be of the extreme type found in Case 5 Langdon Brown notes that the sufferer is generally under-developed sexually In the male Venables (1930) records a case in a boy of 18 whose sexual development corresponds with that of a boy of 14 or 15 (Case 0) The disease is rare in males and this is the only apposite instance I have been able to find in the literature There is abundant evidence however that many of the female cases have a sexual development below normal.

The age of onset of menstruation appears usually to be normal, but it is sometimes retarded. In 12 instances the extremes of age were 12½ years and 17 years (2 cases) with an average of nearly 14 years There are in addition a number of cases where menstruation had never occurred at the time of the disease These are as follows —

Author	Recorded age	Author	Recorded age
Noguès (3)	15	Noguès (7)	18
Gull (3)	15 8/12	Levi (3)	18
Noguès (8)	10	Noguès (16)	24

(No of case in parentheses)

These numbers are not large in themselves, but they are drawn from a total of only 45 case reports and therefore represent some 12 per cent of the total. A further feature of some cases is that the periods have appeared at a normal age but have only lasted for 2 or 3 months and have then ceased They are as follows :—

Case.	Recorded age	Age of onset of menstruation.	No of periods.
Noguès (11)	17	13	2 or 3
Noguès (13)	4	13	2
Comby (1)	13½	1	5
Denlau (1)	1	11	

The evidence suggests therefore that in a proportion of the cases of this disease there is a significant delay—or weakness—in the sexual development of puberty The presence of general infantilism and of an infantile uterus in my two cases is in keeping with this

3 The literature provides several instances in which before the anorexia the patient has been unusually stout Ryle states that *slimming on account of adolescent plumpness* is generally considered to be the second in importance of the psychological causes Some of the records suggest that this plumpness might at times justify the term obesity

(*a*) Thus J C. Young reports of a case in a woman of 2[illegible] that "the patient became very plump about the time of puberty (possibly a pituitary disturbance) She evidently was very fat for the stepmother accused her of pregnancy and had her examined by a doctor

(*b*) Noguès (Case 5) reports the case of a girl of 19 who while at boarding-school from the age of 11 to 16 weighed 60 kg (9½ st) and was so teased on the subject by her friends that she ultimately developed anorexia nervosa.

(*c*) Noguès (Case 6)—This was a woman of 20 who was big and fat in childhood At the age of 19 she attended a wedding where her friends made a point of teasing her at being easily the biggest person at the function (an incident which led directly to the development of anorexia nervosa)

(*d*) Noguès (Case 12)—This was a girl of 18 who was always a big fat child At the age of 15½ she weighed 9¼ st (59 kg) She remained quite indifferent to the teasing of her school friends until one day her aunt remarked that if she went on like that she would become as big as her mother a prospect which so appalled her that she started slimming which led to true anorexia nervosa

(*e*) Comby (Case 1)—Reports the case of a girl who at the age of 13½ was 5 ft 4 in. high and was a very big girl."

(*f*) Ryle reports two instances in his series In one a girl of 19 had been told she was too fat and in the other a girl of 17 the doctor reported that before the illness she had been very stout "

It is clear that in certain cases not only has adolescence been plump but that its degree has left an impression on the minds of both medical and lay observers of the patient. Although it is the psychological effect of this obesity which leads to the anorexia yet the implication of a mild pubertal derangement of pituitary function accords well with the other evidence pointing in the same direction

4 One of my cases had marked *hirsuties* This feature of the disease has been emphasised by Ryle who states the physical stigmata of anorexia nervosa include an overgrowth of downy hair on the trunk and limbs and that in cases of longer standing there may be coarser hairs on the chin Birley (1033) notes that female cases show a tendency towards a male distribution of hair while the reverse *may be found in males Many have noticed that* as a result of the starvation the hair tends to be dry and in one case (Nogues) there was even a slight alopecia which cleared up when the anorexia ceased. Of the five cases above one had general hirsuties with overgrowth of the sexual hair One had no sexual hair at all (age 10) but was otherwise normal in this respect One patient (age 35) had well marked weakness of sexual hair (armpits and pubis). Two patients were normal.

It is clear that in a proportion of the cases the condition of anorexia nervosa has developed in individuals possessing a characteristic collection of physical stigmata In one way or another these agree in their implication of a disturbed pituitary function particularly apt to be seen at puberty It may again be emphasised that although a liability to one type or another of pituitary anomaly appears to form part of the physical constitution of anorexia nervosa the immediate causation is undoubtedly psychological. If there be such a physical constitution at any rate in the large group of cases occurring between the ages of roughly 15 and 25 the amenorrhœa as well as certain other features (low basal metabolism and alterations in sugar tolerance) acquire a new interest

FUNCTIONAL DISTURBANCE

1 *Amenorrhœa* is one of the cardinal features of the disease and its mechanism has not received the attention it deserves largely because attention has been so closely focused on the appetite The amenorrhœa is usually stated to result from the anorexia and this possibility is borne out by the record of famine which causes early loss of menstruation

In a description of the Indian famine of 1879, Cornish writes —

> "There was an impairment or abolition of the menstrual function The secretion was scanty and irregular in the younger women it had ceased prematurely in those of more advanced years, and in many instances of emaciation in younger women the function had temporarily ceased It was also observed that in young girls puberty was retarded The wasting of the mammæ was a very prominent feature in starving women in the worst cases this was so absolute that the gland appeared to have completely disappeared"

It should be noted in connexion with the last point that the reverse is often found in anorexia nervosa This was very evident in Case 1, and the escape of the mammæ from the general wasting was noted by Lockhart Stephens in 1895 (See also Noguès, Case 8) though the opposite is sometimes found (cf Clow, Case 2) Birley states that in one male case there was a mammary hypertrophy

The state of affairs in famine therefore supports the view that the amenorrhœa of this disease may be secondary to the anorexia A study of the clinical records, however, shows that it is often an independent and parallel symptom This is the point of view adopted by Ryle In cases where the amenorrhœa develops after the anorexia, it is indeed likely to be the result of the starvation, but there is abundant evidence that it may also develop either before the anorexia or at the same time Ross (1931) states "from our histories we have failed to find an explanation of the amenorrhœa. Sometimes the menses have never been established satisfactorily, sometimes there had been regular periods The stoppage does not seem to be the result of the emaciation, as it has occurred sometimes before there was any great loss of weight" In my first two cases the amenorrhœa preceded the anorexia Most of the case reports in the literature are not very clear as to the exact time relation between these two symptoms, but in those of Comby, of Noguès, and of Ryle the amenorrhœa appears to have antedated the anorexia Ross reports the case of a girl of 19 A few months before the anorexia appeared she had a period of mild exhaustion, during which the menses stopped Shortly after this she left home for college, and six weeks later she presented the symptoms of complete lack of appetite, amenorrhœa, and irritability of temper There are numerous cases on record in which both symptoms appear to have arisen together (cf Noguès, Cases 4 and 9, Comby, Cases 2, 3, and 4, Sollier, Case 1, Deniau, Case 1), while there are others in which the amenorrhœa was definitely secondary

Clow (1)	Anorexia	3	years	before the	*amenorrhœa*
Berkmann (1)	"	4	months	"	"
Noguès (6)	"	10	"	"	"

It is clear therefore that in not all cases can the amenorrhœa be regarded as secondary to starvation. It cannot be regarded as the cause of the anorexia, and the most reasonable explanation is that it is an hysterical or functional symptom that develops independently of, but parallel to, the anorexia Amenorrhœa of purely emotional origin is well known, and no purpose would be served by detailing further case histories The mechanism of this type of amenorrhœa, if it were known, would undoubtedly be of great interest and would repay study with the modern methods at our disposal. The importance of this view lies in the fact that unlike the anorexia, failure of menstruation involves a physical mediation of which the pituitary is part The observations detailed above, which suggest that in some cases at any rate the functions of the anterior pituitary are already subnormal, are obviously relevant to this

2 *Basal metabolism*—A lowered basal metabolism is a common feature of anorexia nervosa, and indeed it has been erroneously suggested on the strength of it that thyroid provides the most suitable treatment Of the cases above in which it was measured the figures were −20 per cent and −32 per cent in one case and +10 4 per cent in the other In Venables's second case the basal metabolism was said to have been "low" Birley (1933,) found a value of −43 per cent, while in Wittkower's case it fell to −76 per cent

Berkmann reports an extensive series of cases as follows —

No of cases	B M R	No of cases	B M R
13	0 to −10 %	21	−30 to −40 %
34	−10 to −20 %	2	Over −40 %
46	−20 to −30 %		

He suggests that the depression of the metabolism is a protective mechanism, since a person with a low metabolic rate requires less nourishment than the normal person, and that without the lowered metabolism death would occur more often and more rapidly than it actually does This, however, takes no account of the extreme degree of mental and bodily activity often exhibited by these patients, which has received its classical description from the pen of the late Sir Clifford Allbutt The mechanism of this lowering of metabolism is obscure It bears no relation, apparently, to that of myxœdema, and it is not to be taken as an indication for the use of thyroid A similar lowering of the basal metabolism is a constant feature of Simmonds's disease

3 The *glucose tolerance* curves described above depart markedly from the standard curves of the text-books, and until recently they would undoubtedly have been regarded as indicating a disturbance of pituitary function They tend to be of two types (*a*) There is the initial curve displayed by Patients 1 and 5, both of whom were small and had other evidence of pituitary dysfunction These curves were distinguished by the fact that after the ingestion of 50 g of glucose there was no rise in blood-sugar or a rise of only the most modest dimensions, and they suggest either a failure of absorption or an excess production of insulin resulting in a great increase of carbohydrate tolerance (*b*) In the course of treatment these curves altered in each case in the same direction, the curves tending towards the diabetic type Case 4 had also a curve of this type, an initial figure of 0 66 per cent rising to 0 222 per cent in one hour and falling only to 0 181 in two hours These curves, however, hardly fall outside those described by Himsworth (1935) as occurring in normal people after a period of abnormal diet If they are to be explained on this basis it has to be assumed that Patients 1 and 5 before coming under observation had both been living on a diet rich in carbohydrate, which had greatly increased the factor of insulin sensitivity, while the progress under treatment to the opposite type of curve was due to their taking a diet rich in fat Unfortunately I cannot offer accurate information on this point, since it was extremely hard to discover exactly what these patients were eating before coming under observation, but it is my impression that this is not the explanation This aspect of the disease is certainly worthy of more detailed study in future cases, for the well known participation of the pituitary in carbohydrate metabolism and the disturbance of this metabolism described in Simmonds's disease

suggest an alternative avenue of causation The three features (amenorrhœa low basal metabolism and disturbance of carbohydrate metabolism) all form part of the syndrome of this disease and it is also characterised by an extreme loss of weight sometimes accompanied by anorexia The resemblance to anorexia nervosa is obvious and it is unfortunate that the differential diagnosis between them has not occupied more attention from those who have described the syndrome of pituitary cachexia. That this is pertinent may be illustrated from the *difficulty in diagnosis offered by my first* case and while this is no doubt unusual it is probable that such cases occur more frequently than is generally recognised. It may also be illustrated from the case of Simmonds's disease described by Hawkinson (1935) which, apart from the stress laid on the fall of hair somnolence and ageing would do quite well for a characteristic anorexia nervosa—and may actually have been that This patient, a girl of 17 had severe anorexia (half a glass of milk daily) loss of weight (50 lb in 5½ months), amenorrhœa and low basal metabolism Her appetite rapidly returned on treatment with anterior pituitary like gonadotropic principle of pregnancy urine (Follutein) and eventually she progressed to recovery It would be of interest to know how an undoubted instance of anorexia nervosa would respond to such treatment both as regards appetite and menstruation It almost appears as if a similar mechanism were concerned in both types of disease but actuated by a psychological factor in one and by physical means (infarction, &c) in the other (A preliminary survey has, indeed already shown that many of the cases ostensibly described as Simmonds's disease particularly in early life are clinically indistinguishable *from* anorexia nervosa This matter will be dealt with later)

Summary and Conclusions

In laying emphasis on physical aspects of anorexia nervosa which suggest that in some cases there is an underlying hypofunction of the anterior pituitary I do not in any way desire to amend the current conception of the disease—that the loss of appetite begins in response to some psychological need and once established is perpetuated as an hysterical condition This conception is borne out by the fact that physical treatment for the anorexia is out of place the patients being able to recover their appetite with suitable psychological help alone A common emotional cause will explain both the anorexia and the amenorrhœa often associated with it But in the chain of events which lead to the amenorrhœa the pituitary must be involved, and it is of great interest that there is often evidence that the functions of this gland are already subnormal The deficiency may show itself by small height delayed onset of puberty infantile uterus adolescent obesity and in other ways The number of cases in which such observations have been made is impressive but it is clear that they only represent a portion of the whole and they belong almost entirely to the group of cases occurring between the ages of 15 and 25 (Of 57 cases on record 18 showed such features so that about a third of the cases of anorexia nervosa appear to be of similar constitutional tendency) Indeed the symptoms of anorexia nervosa—loss of appetite and weight amenorrhœa low basal metabolism and alterations in carbohydrate metabolism are so similar to those of Simmonds's disease as to suggest that at any rate in the group of cases with which this paper is concerned we are really dealing with a functional Simmonds's disease—a pituitary black-out of psychological origin It is possible that only a certain type of body mind reacts in this particular way that the infantility which often characterises the psychological background may be the counterpart of an actual endocrine infantility This recalls the well known saying of Galen no cause can become efficient without an aptitude of the body and it is to be hoped that the observations collected in this paper may be extended over a longer series of cases for it appears to be a promising field *not only for the study of constitution* but of the more ultimate mysteries involved in the mind body relation

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INTRANUCLEAR INCLUSIONS IN THE EPITHELIUM OF THE HUMAN MALE GENITAL TRACT

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(WITH ILLUSTRATIONS ON PLATE)

In the course of routine examinations of specimens from the operating theatres I observed intranuclear inclusions in the epithelium of the tract developed from the Wolffian duct I therefore examined systematically the microscopic sections from this tract that are reserved in the cabinets of the Bernhard Baron Institute supplementing these with material from current necropsies Later I found that these inclusions had been described and figured by Hammar (1897) as granules in the nuclei of the canal of the epididymis of dogs His findings are referred to later

CHARACTER OF INCLUSIONS

The inclusions (Figures on Plate) are round and of dense homogeneous structure and are stained deeply with eosin As a rule they are closely bounded by a *delicate capsule of chromatin Sometimes however* they lie free in the nucleoplasm without any chromatin capsule and occasionally especially when large they are separated partially or completely from the chromatin capsule by a clear crescent or ring Sometimes it appears as if fragmentation of a large inclusion has formed numerous small spherical or granular examples within a single capsule The number within a nucleus varies considerably usually there is only one but there may be as many as six One large or several small inclusions may distend a nucleus conspicuously One or more nucleoli may be seen in a nucleus as well as inclusions It is impossible, however, to decide whether the inclusions are or are not derived from nucleoli The nuclei and the bodies of the cells containing inclusions show no definite signs of degeneration or special activity

The inclusions can be recognised when 1 micron in diameter and varieties up to 7 micra occur, the usual size being between 3 and 5 micra They are often clearly visible under a ⅓ in and always under a ⅙ in objective, but a 1/12 in objective is very useful when they are small and scanty, as is especially the case about the time of puberty

SITE AND DISTRIBUTION IN TRACT

The inclusions were found in the canal of the epididymis, throughout the vas deferens, and in the seminal vesicles and common ejaculatory duct The number of examinations of these structures and the results are given in the accompanying Table Many examinations were made of the vasa efferentia, but here the inclusions were never seen Further, no inclusions were found in many examinations of the epoophoron of adult females The inclusions were, therefore, found only in that part of the male genital tract that is derived from the Wolffian duct This part of the male genital tract is lined with two layers of cells In the canal of the epididymis the two layers are best developed, while in the ampulla of the vas deferens and in the seminal vesicles they cannot always be distinguished The inclusions occur only in the columnar cells bordering the lumen, and never in the small polygonal or irregular basal cells

Age	No of subjects	—	Testis	Canal of epididymis	Vas deferens				Seminal vesicle	Common ejaculatory duct.
					Lower end	Cord	Intra-abdominal	Ampulla.		
Birth to 14 years.	34	No of exams	29	32		10			2	
		Spg in—	1*							
		Inclusions in—		1*		0			0	
15 to 80 years	71	No of exams	10	35	14	52	5	9	4	1
		Spg in—	10							
		Inclusions in—		35	14	48	3	3	1	1

* Male 4 years 10 months Macrogenitosomia præcox
Spg = spermatogenesis

In the nuclei of the columnar cells and also of the basal cells an inclusion like structure very frequently occurs, which must not be confused with the inclusions described above They are vacuolar structures bounded by a chromatin capsule The vacuoles are usually clear but occasionally contain a pale eosinophil coagulum They show considerable variation in size They occur not only in the epithelium of the tract derived from the Wolffian duct but in the surrounding muscle cells and fibrocytes, and also in the epithelium of the vasa efferentia and the cells of their walls

RELATIVE AFFECTION OF DIFFERENT PARTS OF THE TRACT

It is not possible to judge accurately the relative frequency with which different parts of the tract are affected, and the relative number of inclusions in the different parts, because of the variation in the amount of the available material, there is a great difference in the number of specimens that were taken from different parts of the tract (see Table), and also in the number of sections of the lumen that are obtained in preparations from different parts The canal of the epididymis is the best site for finding inclusions because many sections of the lumen are present in any preparation Only scattered cells are affected, and in a preparation containing many lumina of the canal of the epididymis all lumina may not contain inclusions It is obvious, therefore, that a negative finding in a single cross section of the vas deferens is not sufficient to exclude their presence It can, however, be stated that there are relatively few in the seminal vesicles and upper part of the vas deferens, and many in the lower part of the vas and in the canal of the epididymis

RELATION TO SEXUAL DEVELOPMENT

Much of the material was obtained from tissue removed in the operating theatres, consequently local disease was present in several specimens Such disease was, however, very variable in character and extent Further, the columnar epithelium was affected in an identical manner in healthy material from necropsies Local disease appears, therefore, to have no influence upon the incidence of the inclusions There is, however, a striking relation to the sexual development of the subject and consequently the age

It will be seen from the Table that the inclusions without exception were not seen before the onset of spermatogenesis, and with one exception were not seen before the age of fifteen In 34 subjects of ages ranging from birth to fourteen years the seminal vesicles were examined microscopically twice, the vas deferens in the spermatic cord 10 times, the canal of the epididymis 32 times, and the testicles 29 times Spermatogenesis was present only once, and in this case alone were inclusions found (Figure on right of Plate) This case has been described fully by Le Marquand and Russell (1934–35) The patient, aged 4 years and 10 months, died of heart failure, fatty degeneration of the myocardium, and rheumatic myo , peri , and endo-carditis Macrogenitosomia præcox was present in association with a small tumour like mass of ectopic brain tissue dependent from the floor of the third ventricle of the brain

In 71 subjects of fifteen years and over the inclusions were found in all in one or other but not all parts of the tract in question Inclusions were found in 1 of 4 seminal vesicles examined microscopically, in the only common ejaculatory duct examined, in 3 of 9 ampullæ of the vas deferens, in 3 of 5 examinations of the remainder of the intra abdominal vas deferens, in 48 of 52 vasa deferentia within the spermatic cord, in all of 14 lowermost ends of the vas deferens, and in all of 35 examinations of the canal of the epididymis The testicles were examined in 10 subjects, of whom 7 were between fifteen and twenty years of age, and spermatogenesis was present in all

Between the ages of fifteen and twenty five the inclusions were fewer than in later years, and at fifteen and sixteen years they were so sparse as to be difficult to find No regular increase with age after twenty five was seen, although the subjects in whom they were numerous and conspicuous were usually in later adult life The number and size of the inclusions varied, indeed, in different subjects of about the same age

NATURE OF THE INCLUSIONS

The inclusions closely resemble morphologically intranuclear inclusions found in proven virus infections. They only differ in being less frequently separated from the chromatin capsule by a clear halo. They resemble the inclusions of Type B of Cowdry (1934) more closely than those of his Type A. They only appear, however, when spermatogenesis is active and are then, according to this investigation, found in all subjects. This makes it somewhat difficult, though not impossible, to accept them as evidence of a virus infection. It is possible that they arise under the influence of a hormone during the period of sexual activity and are expressions of an augmented secretory activity on the part of the cells lining the tract derived from the Wolffian duct. By ordinary histological methods, however, such activity is not apparent.

Hammar in 1897, in a paper upon the secretory appearances in the epididymis of the dog, described and illustrated very fully identical structures in the cylindrical cells of the canal of the epididymis. In the uppermost part of the canal nearly all the nuclei were affected. He did not find them in the vasa efferentia, the basal cells of the canal of the epididymis or in the vas deferens. He found them in all dogs examined from the age of eight months to sixteen years but failed to find them in two foxes. He believed that these intranuclear granules passed into the cytoplasm leaving vacuoles in the nuclei. He concluded that they did not form the cytoplasmic secretory granules that he also described in the epithelium, chiefly because similar cytoplasmic secretory granules were present in abundance in the foxes but no intranuclear granules. He found it impossible to exclude the possibility of their being granules of an internal secretion secreted through the bases of the cells but came to no definite conclusion concerning their nature.

Evidence of the passage of the inclusions from the nuclei into the cytoplasm was not found in the human material examined by me. The vacuoles seen in the nuclei of the columnar cells of the canal of the epididymis were similar to those in the basal cells and the cells of the vasa efferentia, in which the intranuclear inclusions were never found. The inclusions remained in the nucleus even of cells desquamated into the lumen.

Wagner (1930) described in an infant of two weeks protozoa-like structures in the nucleus of cells of many organs including the epididymis and salivary glands. This probably was an example of a virus infection of the type described by von Glahn and Pappenheimer (1925) and by Farber and Wolbach (1932) in which inclusions are found in the salivary glands and other organs of infants.

SUMMARY

In a series of microscopic sections of the male genital tract of man intranuclear inclusions were found in the columnar cells lining the part derived from the Wolffian duct—that is, in the part beginning with the canal of the epididymis and ending in the common ejaculatory duct. Their relative number in different parts of this tract is described. They were not found in the vasa efferentia nor in the epoophoron of the female. They were present in all subjects in whom spermatogenesis was proved by microscopic section or could be inferred from the age. They were not present in subjects under fifteen years of age except in a boy of four years and ten months who showed macrogenitosomia præcox and active spermatogenesis. In morphology they resemble closely intranuclear inclusions in proven virus infections, but their invariable presence when spermatogenesis is active makes it somewhat difficult to regard them as due to a virus infection. To determine their nature experiment is necessary.

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TREATMENT OF FRACTURE OF THE NECK OF THE FEMUR

A NEW PRINCIPLE OF WIRE INTRODUCTION FOR SMITH-PETERSEN NAIL

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(WITH ILLUSTRATIONS ON PLATE)

THE insertion of a Smith-Petersen nail without open exposure of the hip joint has been the subject of considerable work, first by Sven Johannson (1934) and later by others, including Lloyd (1935), Brittain (1936) and Hey Groves (1936). These surgeons have introduced techniques dependent upon radiography in two planes with careful measurements and calculations evolved from these.

The method now described aims at the accurate introduction of a Smith-Petersen nail over a Kirschner wire in a manner which obviates the *necessity either for such calculations or for a lateral* X ray during operation. It is based upon the following two anatomical facts. First, the anterior surface of the neck of the femur is a comparatively flat plane extending on to the anterior surface of the shaft immediately below the great trochanter. Secondly, a line through the centre of the neck passes ½ in. behind this plane and emerges from the outer surface of the femur ½ in. below the lower border of the great trochanter, under cover of the origin of the vastus externus muscle.

THE INSTRUMENT

By means of the introducer shown in Fig. I a Kirschner wire is drilled in the axis of the neck and passes automatically ½ in. behind its anterior surface.

The instrument consists of two parts (see Fig. I). (1) A handle carrying a blade (A) ½ in. wide which rests on the anterior surface of the neck. (2) A block (B) reversible for right or left hip attached to the blade 2 in. *from* its point. This block (which is 1 in. square and 2½ in. long) has the inner extremity shaped to the outer surface of the femur at an oblique angle in such a way that when it is brought into apposition with the bone the surface blade (A) lies over the centre of the neck (Fig. II). Through the centre of the block passes a guide hole which directs a known length (3½ in.) of wire into the neck, ½ in. behind and parallel to the surface blade, ready for radiographic confirmation of length and direction, before finally introducing a Smith-Petersen nail over the wire. Two accessory guide holes also pass through the block ½ in. above and below the centre.

METHOD OF INTRODUCTION

An injection of Omnopon gr. ½ and scopolamine gr. 1/100 is given, followed by a spinal anæsthetic of

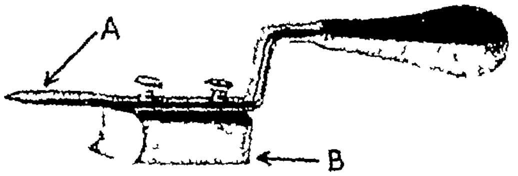

FIG I —The introducer (A) blade (B) block with central and accessory guide holes

3 c cm Decicain, and the patient is turned half over on to the sound side

An incision 3 in long is made along the line of the femur commencing over the middle of the great trochanter The skin and fascia lata are divided and the vastus externus exposed The fibres of this muscle are divided longitudinally and the bone bared for 1 in immediately below the lower border of the great trochanter The blade of the introducer is inserted along the anterior surface of the neck keeping well on to the bone, until the block is brought into apposition with the shaft of the femur in the space cleared The block is felt to "lock" against the side of the bone and is pressed upwards to ensure that it is immediately below the trochanteric attachment of the vastus externus which will prevent it from riding any higher on the bone The blade should now lie over the centre of the neck and may be checked by feeling for the lower end of the intertrochanteric ridge at the angle of the neck, which should be one finger's breadth below the blade An assistant then holds the introducer in position while 6 in of Kirschner wire are drilled through the centre guide hole, leaving 2½ in in the block and 3½ in in the neck The introducer is withdrawn leaving the wire in position, and a radiogram is next taken in the antero posterior plane for estimation of the length of Smith-Petersen nail required, and for confirmation of position No attempt is made to take a lateral view, the correct depth being assured, but the antero posterior view shows whether or not the wire is centrally placed from above downwards In the majority of cases the wire is found to be in a mid position Should, however this be a fraction too high or too low, the introducer is replaced over the wire, and a second wire is inserted through the appropriate accessory guide hole parallel to the first, which is withdrawn The Smith Petersen nail (Sven Johannson type) is then guided over the wire and impacted into the neck The wire is then withdrawn as soon as the nail has entered for 2 in The edges of the vastus externus are brought together over the head of the nail and the skin wound is sutured The procedure takes 15–20 min with 10 min for the taking and developing of the radiogram (see Figure on Plate)

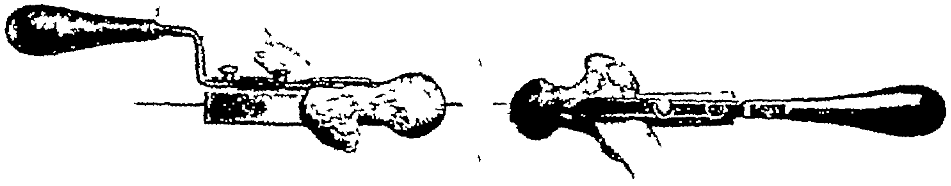

FIG II.—Left the introducer in position, from above showing the wire passing through the block and the centre of the neck of the femur ¼ in behind the blade Right the blade resting on the anterior surface of the neck

The above method was given repeated satisfactory trials on the cadaver before engaging on a current series of clinical cases These cases are all treated in the first instance by a "strapping" extension applied as soon as possible after the accident to the limb which is slung in a Thomas's splint Weights varying from 16 to 30 lb are applied until reduction is affected as shown by radiography in two planes The extension gives immediate relief from pain, and assists in the improvement of the general condition, which on an average permits of the insertion of a nail in 10–14 days after the accident The spinal anæsthetic and introduction of the nail are carried out without moving the patient from bed, or disturbing the weight extension, and the radiogram is taken with a portable machine, with the cassette placed under the patient before the operation is begun

This complete "bed procedure" is strongly advocated, but the method is equally applicable to the more common usage of traction combined with an orthopædic table, and of other forms of anæsthesia, such as local, nitrous oxide and oxygen, or intravenous, should these be preferred

I am indebted to Dr A Morris, medical superintendent of St Leonard's Hospital, for the facilities that he has given me, to the hospital staff for their coöperation, to Mr A D Brown for his careful radiography and photographic illustrations, and to Surgical Equipment Ltd., North Acton, for their efficient manufacture of the introducer for the London County Council

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LEGENDS TO ILLUSTRATIONS ON PLATE

DR GILMOUR

Canal of epididymis *x* = inclusions in focus *y* = out of focus Left Male aged 37 Right Male aged 4 years 10 months Hæmatoxylin and eosin (×585)

MR BAILEY

FIG III —Fracture of the neck of the right femur of a man, aged 71, knocked down by a bicycle. (A) On admission (B) After reduction by simple strapping extension with 20 lb weight (C) Guiding wire too near the upper border corrected by introducing a second wire parallel to the one shown, through the lowest guide hole of the introducer (D) The nail in position, introduced over the second wire.

MR NORTHFIELD AND DR. RUSSELL

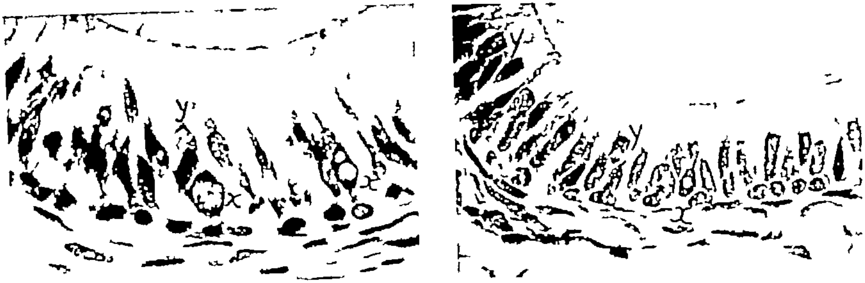
FIG II (Case 1) —Capillaries plugged with thorotrast in inflammatory zone near hæmorrhage Hæmatoxylin and eosin. (×146)

FIG III (Case 1) —Capillary plugged with thorotrast in white matter 1 2 cm distant from hæmorrhage Hæmatoxylin and eosin (×165)

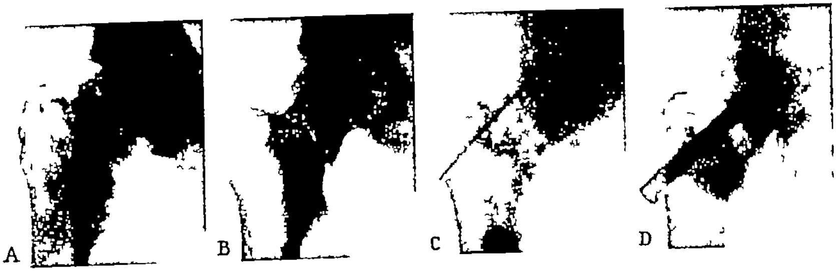
FIG IV (Case 2) —Capillaries plugged with thorotrast in white matter Note perivascular œdema and degeneration below, the more normal white matter forming a darker band along upper border Hæmatoxylin and eosin (×175)

FIG V (Case 4) —Granules of thorotrast in group of macrophages to right of arteriole in ocular muscle Muscle fibres seen at right border Hæmatoxylin and eosin (×420)

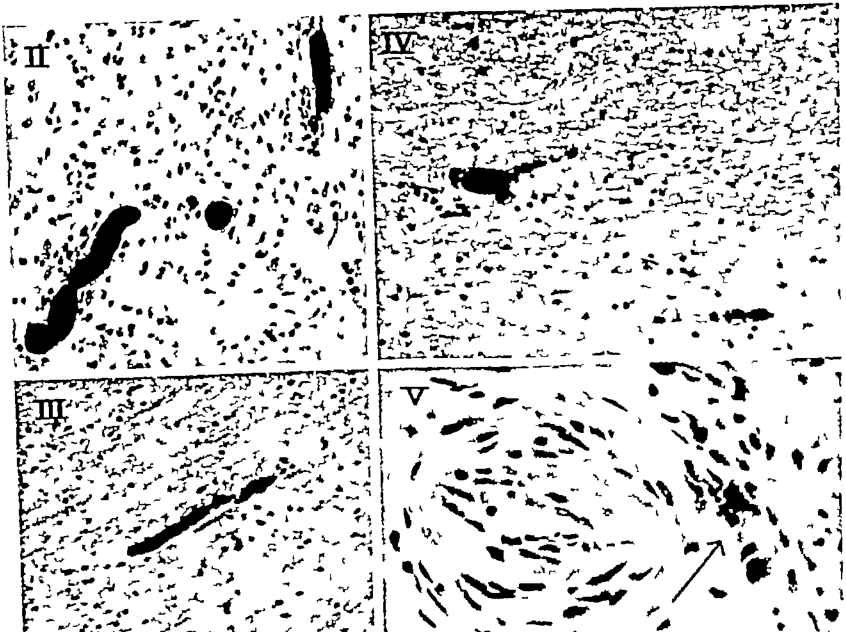
DR GILMOUR   INTRANUCLEAR INCLUSIONS IN GENITAL TRACT



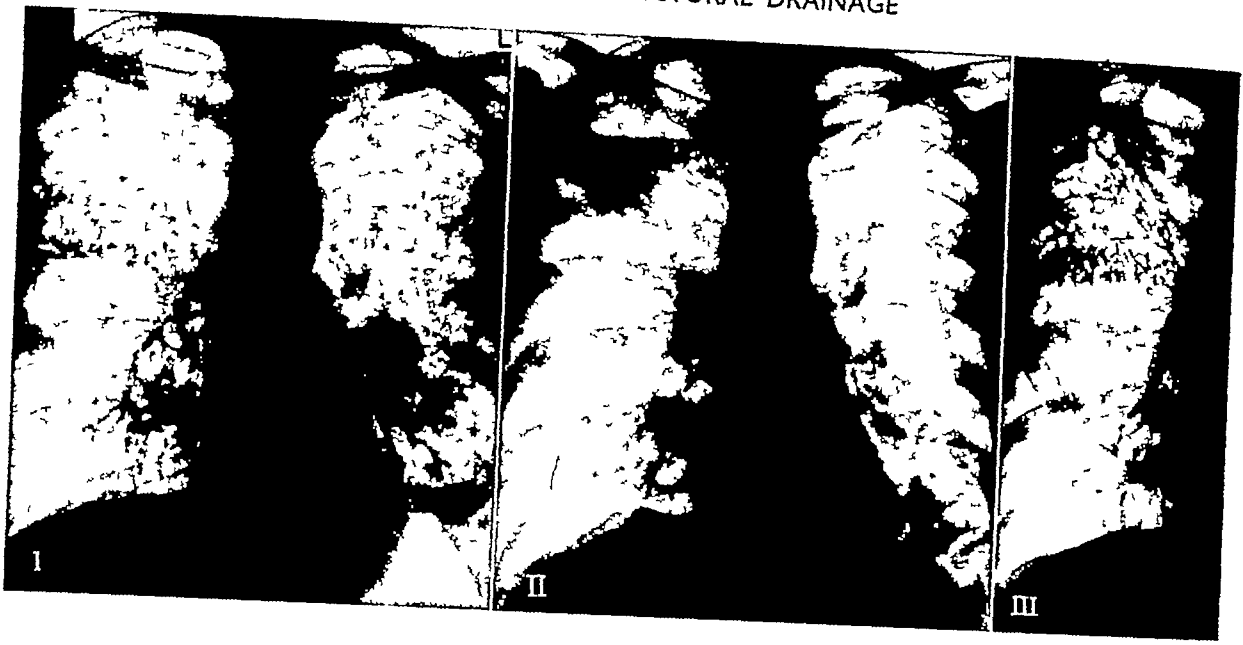
MR. BAILEY   TREATMENT OF FRACTURE OF NECK OF FEMUR



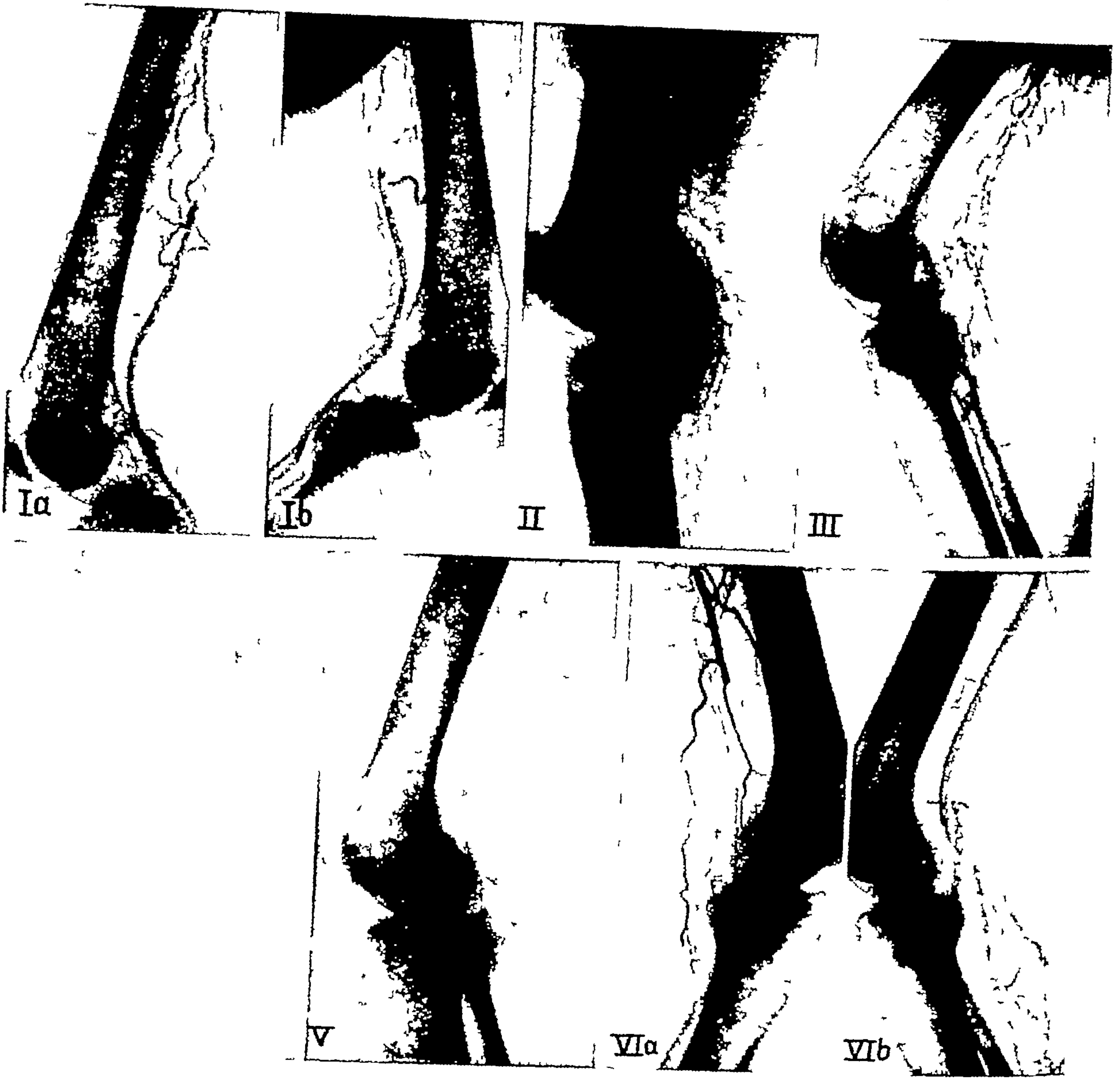
MR. NORTHFIELD & DR. RUSSELL   THOROTRAST IN CEREBRAL ARTERIOGRAPHY



DR MORLOCK POSTURAL DRAINAGE



MR BOYD THROMBOSIS OF POPLITEAL AND FEMORAL ARTERIES



THE FATE OF THORIUM DIOXIDE (THOROTRAST) IN CEREBRAL ARTERIOGRAPHY

BY D W C NORTHFIELD M S Lond. F R.C S Eng.

AND

DOROTHY S RUSSELL,* M.D Lond.

(From the Neurosurgical Department and Bernhard Baron Institute of Pathology the London Hospital)

(WITH ILLUSTRATIONS ON PLATE)

THE use of thorotrast as a means of visualising the cerebral circulation was introduced by Moniz (1931) as a substitute for sodium iodide This practice has been adopted in many neurosurgical clinics and has proved to be a valuable auxiliary method of diagnosis After three years experience Moniz (1934) emphasises the harmlessness of thorotrast He finds no radiological evidence of its retention in the cerebral vessels but no histological studies appear to have been made either by Moniz or others to settle this point.

The possibility that a pathological lesion might alter the fate of the thorotrast has been considered by Alexander Jung and Lyman (1934) who think it unlikely that in the presence of an intracranial vascular lesion the thorium dioxide would reach the parenchyma since the lesion would be in an area of stasis. The colloidal thorium dioxide could hardly be expected to penetrate this area of stasis but would be carried off at once in the actively flowing stream of blood into which it is injected. In this paper we are not concerned with the main sites of storage in the body but only with the evidence of its retention in the brain in certain intracranial diseases. In the first four of the following cases thorotrast has been detected in the brain at varying intervals after its injection.

Case I

Male, aged 55 years. Old cerebral hæmorrhage Degeneration of cerebral and systemic arteries Arteriography

CLINICAL HISTORY

He had suffered from indefinite headache since childhood Whilst out walking on Dec 1st 1935 he noticed that his left eye was "cold and felt dead." He returned home to bed and during the evening he had a generalised convulsion with loss of consciousness lasting half an hour On the following day his speech was noticed to be affected, and this trouble together with "coldness" and failure of vision in the left eye steadily increased and was associated with more pronounced frontal headache On Jan. 21st 1936 physical examination revealed very slight bilateral papilloedema, retinal arterio sclerosis a small retinal hæmorrhage and an almost complete right homonymous hemianopia There was slight right facial weakness of an upper neurone type with diminution of the abdominal reflexes on the right side Aphasia was severe and affected both afferent and efferent pathways and there was alexia and agraphia. Cerebro spinal fluid: 6 white cells per c.mm., total protein 120 mg per 100 c cm Blood pressure 195/130 mm. Hg Wassermann reaction in blood and cerebro-spinal fluid negative Radiograms of the skull gave no helpful information

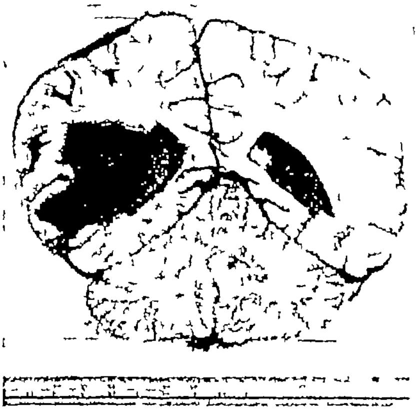


FIG 1 (Case I) —Coronal section of brain to show hæmorrhage in left hemisphere.

The lesion was clearly situated in the left temporo occipital region and arteriography was performed in order to distinguish between cerebral vascular disease and a rapidly growing glioma On Jan 22nd 1936 both common carotid arteries were exposed under local anæsthesia the patient having received 3 grains of Nembutal by mouth as a sedative; as he became uncontrollably restless more nembutal was given intravenously Thorotrast (10 c cm.) was then injected into each carotid artery in turn. The radiograms demonstrated gross dilatation of both carotid siphons In addition, on the left side the posterior part of the Sylvian group of blood vessels and the pericallosal artery were considerably displaced upwards and forwards suggesting a large left temporo-occipital tumour

The patient never regained consciousness; the temperature pulse and respirations rose rapidly and he died with signs of pulmonary œdema and heart failure on the following day 21 hours after the injection

MACROSCOPIC EXAMINATION (P M 30/1936)

A hæmorrhage (6 by 4 by 3.5 cm.) occupied the white matter of the left cerebral hemisphere lying deep to the terminal part of the Sylvian fissure close to the middle cerebral artery and extending posteriorly beneath the superior temporal convolution to end in the occipital lobe over the dorso-lateral aspect of the occipital horn (Fig I)

LEGENDS TO ILLUSTRATIONS ON PLATE

DR. MORLOCK

CASE I

FIG I —Radiogram showing left basal bronchiectasis

FIG II —Abscess in right upper lobe (fluid level) after seven months inefficient postural drainage at home.

FIG III —After four treatments with bronchoscopic lavage: no evidence of remains of cavity

MR. BOYD

FIG I (Case 1) —Arteriogram of lower part of thigh and popliteal region showing thrombosis of superficial femoral artery and irregularity of lumen of the popliteal artery (a) Right side (b) left.

FIG II (Case 2) —Thrombosis of femoral and popliteal arteries Note the characteristic tortuous hypertrophied collateral vessels

FIG III (Case 3).—The popliteal region showing thrombosis of the popliteal artery

FIG IV (Case 4) —Thrombosis of a small segment of the superficial femoral artery and gross irregularity of lumen of the popliteal artery

FIG V (Case 6) —Thrombosis of the popliteal, anterior and posterior tibial arteries

FIG VI (Case 7).—Thrombosis of the popliteal artery (a) in the right leg and (b) in the left.

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* Working for the Medical Research Council.

In many places the clot was brown and pultaceous The surrounding white matter frequently showed cystic or gelatinous softening with conspicuous orange brown pigmentation There was no evidence of recent hæmorrhage No aneurysm was found on dissection of the blood vessels, the hæmorrhage appeared to be due to leakage from a branch of the left middle cerebral artery which, in common with the other main cerebral arteries, was greatly dilated and showed severe atheroma

There was severe fibrosis of the myocardium secondary to coronary atheroma, but no definite myocardial hypertrophy (Weight of heart 13½ oz)

MICROSCOPIC EXAMINATION

Paraffin sections of tissue from four different parts of the periphery of the hæmorrhage were examined Two of these included the adjacent left middle cerebral artery, one was from the anterior end of the hæmorrhage, and the fourth included the posterior end of the hæmorrhage and the adjacent wall of the occipital horn

In all parts the hæmorrhage is enclosed by a broad inflammatory zone in which the nervous tissue is densely infiltrated with lymphocytes, polymorphonuclear leucocytes, and macrophages containing iron pigment Many of the capillaries and small veins throughout this zone, as well as in the more remote cortex and white matter to a distance of 1 5 cm, are dilated and plugged with a highly refractile, homogeneous hæmatoxyphil substance (Figs II and III on Plate) The plugs are purplish red in Weigert's iron hæmatoxylin and van Gieson, and are negative to stains for fibrin and iron As a rule they are slightly retracted from the endothelium and, in many places, are broken up into droplets of various sizes amongst which are found red corpuscles Unstained brightly refractile particles, identical in appearance with those found in the Kupffer cells of the liver in this and in other cases where thorotrast has been injected, can be seen with a 1/12 inch objective to adhere in places to the endothelial lining of the vessel The cytoplasm of the endothelial cells of the affected vessels is occasionally vacuolated No particles are present outside the walls of any vessels that lie beyond the inflammatory zone In the latter, however, the particles have in some instances penetrated the vessel wall They are then seen both in the cytoplasm of the endothelial cells and also packed within adventitial macrophages In such situations they are distinguished from the granules of iron pigment by their greater refractility, but above all by their lack of colour, their negative reaction to Turnbull's blue (Mallory's modification) No occluded vessels were found in the leptomeninges

Distant parts of the brain in this case were unfortunately not examined

COMMENT

In this case in which death followed 21 hours after the injection of thorotrast, there is histological evidence of extensive occlusion of small veins and capillaries by a substance of colloidal appearance which we interpreted as thorotrast To obtain confirmation of this we injected thorotrast through the renal artery into a kidney at necropsy Sections, cut and stained in the same way as the pathological material, showed obstruction of the vessels by material of identical appearance and staining properties Additional proof of the identity of the colloidal material was given by the presence at the periphery of the plugs and, in some places, within the adjacent endothelium and adventitial macrophages of numerous highly refractile, unstained particles, resembling those found by us and others in the Kupffer cells of the liver after the injection of thorotrast

A greater degree of permeability of the capillaries in the inflammatory zone in comparison with those in the remoter brain tissue is shown by the passage of thorium dioxide beyond the confines of the vessel walls This increase of permeability of the cerebral capillaries in inflammation is well recognised and has been discussed at some length by Burrows (1932)

Case II

Female, aged 41 years Meningioma of falx. Arteriography and subsequent operative removal of tumour with adjacent cerebrum

CLINICAL HISTORY

She had suffered for two years from progressive weakness of the right leg later involving the right arm More recently there had been headaches, with increasing disturbance of speech and memory She was a right handed well nourished woman, with marked loss of memory and concentration, and with a considerable degree of expressive aphasia There was blurring of the right optic disc, and a right homonymous hemianopia She had a fairly pronounced right hemiparesis with which was associated gross sensory loss of a cortical type Radiograms of the skull gave no information of localising value The blood pressure was 118/90 mm Hg The cerebro spinal fluid was normal On August 10th, 1936, arteriography was performed under local anæsthesia 15 c cm of thorotrast being injected into each common carotid artery On the left side the arteriogram showed in the frontoparietal region the faint outline of a tumour causing a marke depression of the pericallosal and callosomarginal arteries The diagnosis was made of a falx meningioma in this situation.

Immediately after the thorotrast injection the patient became unconscious and remained so until her operation. In addition the hemiparesis appeared to become absolute These manifestations were assumed at the time to be due to some vascular disturbance created by the injection On August 12th, 1936, the tumour was exposed by excising a piece of frontal lobe anterior to the precentral gyrus (identified by thyratrone stimulation), and was completely removed About two thirds of the tumour lay in the frontal lobe anterior to the Rolandic sulcus the posterior third occupying the parietal lobule

The patient made a satisfactory recovery from the operation as regards her general physical state, swallowing and mental alertness For some weeks there was no recovery from the hemiplegia, and speech was limited to 'Yes" and "No" Her powers of understanding however wer evidently fairly acute On Sept 5th she was transferre to a nursing home During the last few days before leaving hospital slight power returned in the leg and arm and increased slowly, so that when last seen on Nov 13th, 1936, she was able to walk unaided, and could carry on a reasonable conversation

PATHOLOGICAL EXAMINATION (S D 2046/1936)

The material received for histological examination consisted of numerous fragments of tumour, together measuring 8 cm in diameter and up to 1 cm high Microscopic examination confirmed the clinical diagnosis of meningioma of the falx The blood vessels of the tumour contained no abnormal material Accompanying the tumour was the portion of frontal lobe (4 2 by 2 5 by up to 1 5 cm thick) described in the operation notes This showed no macroscopic abnormality beyond a number of small fresh hæmorrhages and distortion of the pattern by compression. On its deep surface was a smooth, slightly concave area (2 5 by 1 8 cm) representing a part of the tumour bed A vertical section through this to include both cortex and white matter showed on microscopic examination, plugging with thorotrast of a considerable number of capillaries and small veins in the white matter (Fig IV on Plate) With high magnifications unstained, brightly refractile particles were seen, as in Case I, at the periphery of many of the plugs, and occasionally in the cytoplasm of the adjacent endothelial cells Nowhere however, were particles seen outside the vessel walls In addition there were conspicuous areas of perivascular œdema and degeneration about many of the occluded vessels (Fig IV) Small foci of recent hæmorrhage were present in some of these areas Very few of the vessels in the grey matter contained plugs of thorotrast

COMMENT

During the 48 hours that elapsed between arteriography and the surgical removal of tissue the patient, in this case, was unconscious and showed an increase of hemiparesis This clinical disturbance appeared to be attributable to the injection of thorotrast; the histological examination of the vessels in the cerebral tissue forming the bed of the tumour supports this interpretation The appearances are similar to those in Case I but there are here, in addition, pronounced perivascular œdema and degeneration that appear to be due to the blockage of vessels by thorotrast. Such perivascular changes are not ordinarily seen in cerebral tissue adjacent to a meningioma. That they are present here but not in Case I is perhaps accounted for by the longer interval of time after arteriography The failure of the granules of thorium dioxide to gain the adventitial tissues can be explained by the absence of local inflammation in this case and the well known relative impermeability of the cerebral capillaries when inflammation is absent. From our experience in Case I it is probable that thorotrast was also retained in other areas adjacent to the tumour including the upper part of the motor cortex this would explain the unduly slow recovery from the hemiplegia after operation

Case III

Female aged 10 years. Chronic hæmolytic streptococcal abscess of temporal lobe Arteriography Enucleation of abscess.

CLINICAL HISTORY

She had complained of headache and vomiting for four months For two days at the beginning of the illness there had been pain and swelling of the neck—on which side was uncertain. Epileptiform convulsions had occurred but details were not available Examination revealed severe bilateral papillœdema, blindness of the left eye great contraction of the right visual field and a nasal hemianopia. There was slight left facial weakness and an increase of tone and of the tendon jerks in the left arm and leg The spinal fluid was under a pressure of 300 mm it contained 7 cells per c.mm and 80 mg of protein per 100 c cm. The skull was normal on radiographic examination and the eardrums appeared healthy

Arteriography was performed on March 11th, 1936 under avertin gas and oxygen 10 c.cm. of thorotrast being injected into each common carotid artery On the right side were seen the typical appearances of a temporal lobe tumour—namely marked elevation and compression of the Sylvian group of vessels and some forward displacement of the terminal portion of the carotid siphon A diagnosis of temporal lobe tumour was therefore made abscess being considered unlikely in view of the healthy tympanic membranes

A right lateral osteoplastic flap was turned immediately afterwards, and a chronic encapsulated abscess dissected out from the temporal lobe An interval of approximately 4½ hours elapsed before the abscess was completely removed A small thin portion of superficial cerebral cortex was removed with the abscess In the region of the tegmen tympani the dura was adherent to the abscess wall from which it appears that the abscess was secondary to otitis media. The patient made an uneventful and complete recovery except for severe impairment of vision

PATHOLOGICAL EXAMINATION (S.D. 717/1936)

The material received was a pyriform mass measuring 8 by 3·5 by 4·5 cm. It was composed of a central cavity containing thin turbid reddish brown fluid and flakes of fibrin and surrounded by a smooth shell, from 0·15 up to 0·7 cm. thick, of tough greyish brown tissue studded with miliary and slightly larger yellow inspissated abscesses The only recognisable cerebral tissue present was a small plaque of superficial temporal cortex, measuring 5 by 3 cm

A section through the temporal cortex and subjacent wall of the cavity showed the typical appearance of a chronic brain abscess There was no evidence of thorotrast in the blood vessels but a few granules were identified within perivascular phagocytes deep in the abscess wall.

COMMENT

The presence of thorium dioxide within adventitial phagocytes again demonstrates the greatly increased permeability of the cerebral capillaries in an inflamed area The material is in other respects unrewarding because so little of the adjacent brain was available for examination. The superficial fragment of temporal cortex was devoid of thorotrast but it is possible, in the light of the preceding cases that examination of the white matter adjacent to the deeper parts of the abscess would have yielded a positive result.

Case IV

Male aged 43 years. Secondary carcinoma of right cavernous sinus Arteriography five months before death.

CLINICAL HISTORY

He had noticed drooping of the right upper eyelid in March, 1935 and several months later he developed severe pain in the right eyeball. This pain, which was intense and constant subsequently involved the right side of the face and was his chief complaint In February 1936 he was admitted to the National Hospital, Queen square Examination revealed slight right ptosis and proptosis the right pupil was larger than the left although the reflexes of each were brisk; there was slight diminution of sensibility to pin prick in the area of skin supplied by the first division of the right trigeminal nerve Complete paralysis of the right external rectus muscle subsequently developed. Arteriography was performed on April 3rd, 1936 by Mr Harvey Jackson who has kindly allowed us to publish these details *In order to obtain views of the* cerebral blood vessels in two planes, two consecutive injections of 18 c cm. and 15 c.cm of thorotrast were made into the right internal carotid artery The radiograms did not reveal any aneurysm. During the injection he experienced sudden intense pain in the right eye Two hours later there had developed swelling and chemosis of the right upper and lower eyelids, with some impairment of vision and slight limitation of ocular movements in every direction During the next few days the lids were so swollen that the eyeball could not be examined A fortnight later all swelling had subsided and the eye movements were the same as before arteriography It was assumed that the injection had produced an aseptic cavernous sinus thrombosis.

When admitted to the London Hospital in August 1936 he was still experiencing great pain and examination revealed the following physical signs: the optic discs were flat and the visual fields normal there was considerable proptosis of the right eye which was immobile except for a slight degree of outward movement and its pupil was dilated and fixed; there was severe sensory impairment and complete motor paralysis in the distribution of the right trigeminal nerve; severe right facial weakness of the infranuclear type with loss of taste over the right side of the tongue Radiography of the skull was not helpful The cerebro-spinal fluid showed a slight increase of protein (0·0[illegible] g per 100 c cm.) The Wassermann reaction in both blood and cerebro spinal fluid was negative

The diagnosis was considered to be a tumour in the region of the cavernous sinus probably a meningioma-en plaque of irremovable nature In order to give relief from the intolerable pain it was decided to divide the right trigeminal nerve by the cerebellar route The operation took place on August 2[illegible]th 1936 but the patient died on the following day from reactionary hæmorrhage in the posterior fossa.

MACROSCOPIC EXAMINATION (P.M. 3[illegible] 1936)

The right middle fossa appeared normal superficially but on dissection the right cavernous sinus and adjacent Gasserian ganglion were replaced by [illegible] greyish white tissue forming a mass 1·3 by 1·3 by 1 cm, lep

This protruded anteriorly through the superior orbital fissure and infiltrated the posterior 1 cm of the soft tissues of the orbit The sheath of the internal carotid artery in the petrous portion of its course was thickened and infiltrated, but neither the adjacent bone nor the pituitary fossa were macroscopically involved No tumour was found in the rest of the body, but the skull was not split to expose the nose, accessory sinuses, and nasopharynx

MICROSCOPIC EXAMINATION

Coronal sections through the hinder part of the orbital contents and through the Gasserian ganglion and cavernous sinus show great fibrosis and a diffuse infiltration of the tissues with polygonal celled secondary carcinoma Refractile, unstained granules of thorium dioxide are present in macrophages, usually about the adventitia of veins and arterioles (Fig V on Plate) of the orbital tissues and of the tumour Similar granules are often present in small numbers in the media of arterioles in the following situations the septa of the hinder parts of the ocular muscles, right lateral border of the optic chiasm and nerve and adjacent meninges, the posterior lobe and pars intermedia of the pituitary gland and in one arteriole only in the anterior lobe Arterioles so affected frequently showed an endarteritis fibrosa, in the single arteriole affected in the anterior lobe of the pituitary there is endothelial proliferation No changes were observed in the nervous tissue of the optic tract adjacent to affected arterioles Phagocytes containing thorium dioxide are present in the fibrous tissue stroma of the tumour Particles are also present in cells, similar to those that ordinarily store pigment, in the posterior lobe of the pituitary

No thorium dioxide was identified in sections through the right gyrus rectus and the lower part of the right Rolandic region with their leptomeninges

COMMENT

The complete paralysis of trochlear and oculomotor nerves which eventually developed in this case was doubtless due to the compression of these nerves, together with the less completely affected abducens, by carcinoma in the superior orbital fissure The striking clinical disturbance that followed in two hours the injection of thorotrast and persisted for two weeks can only be explained by obstruction of ophthalmic veins or, possibly, capillaries It was regarded at the time as due to aseptic thrombosis of the cavernous sinus When the cavernous sinus was examined microscopically five months later it was found to be obliterated by cancerous infiltration No iron pigment was present, so that it is very unlikely that the obliteration was preceded by thrombosis We consider it more probable that the disturbance was due to plugging of vessels with thorotrast, as demonstrated in Cases I and II The gradual subsidence of symptoms presumably accompanied the dispersal of the plugs of thorotrast The presence of granules of thorium dioxide in macrophages round venules suggests that this substance was dispersed by passage through the walls of the occluded vessels It cannot, however, be taken as definite evidence of this method of dispersal, because similar macrophages surrounded arterioles, and we have not yet found arterioles occluded with thorotrast, moreover, occlusion of arterioles would not have caused the clinical signs The association of these deposits with an endarteritis fibrosa recalls the observation of Fleming and Chase (1936) of a portal fibrosis of the liver in a human subject five months after an intravenous injection of thorotrast There is also, however, a possibility that the endarteritis fibrosa preceded arteriography and facilitated the retention of the thorotrast

The site of the primary tumour in this case is unknown At necropsy the possibility of metastasis, although considered, was regarded as unlikely in view of the long history and the absence both of a primary tumour and of secondary deposits elsewhere in the body The possibility of a primary carcinoma of the nose, accessory nasal cavities, or nasopharynx cannot be ruled out as the skull was not divided sagittally at necropsy, but a clinical examination made specifically for this purpose did not reveal any tumour in this region

Five Other Cases

Histological investigation of the following fi cases in which arteriography had been performe failed to reveal any retention of thorotrast withi the brain

Case V—Female, 41 years Right frontal spongioblastoma multiforme One day before death 11 c cm of thorotrast were injected into each common carotid artery with good results After needling of both frontal lobes and identification of tumour tissue the patient did not recover consciousness

Case VI—Male, 37 years Right fronto temporal spongioblastoma multiforme Four days before death injections of 15 c cm Hippuran and 15 c cm thorotrast into the right common carotid artery failed to give satisfactory radiograms The left cerebral vessels were well seen after injecting 15 c cm of thorotrast into the left common carotid artery Three days before death bifrontal ventricular estimation was carried out afte which the patient did not recover consciousness

Case VII—Female, 50 years Left frontal meningioma Eight months before death 16 c cm thorotrast were injected into each common carotid artery, and the cerebral vessels were successfully demonstrated The tumour was partially removed in several stages

Case VIII.—Male, 66 years Suprasellar meningioma Arteriography was carried out 2 days before death, a good result being obtained on the left side and a moderate on the right The tumour was partially removed on the next day Death was due to excessive hæmorrhage at operation.

Case IX—Male, 41 years Secondary carcinoma of right parietal lobe Primary carcinoma of stomach Arteriography was successfully performed on the day before death

Discussion

Retention of thorotrast in the intracranial circulation and its passage through the endothelium to be stored in macrophages have been described in four cases † In Cases II and IV arteriography was associated with clinical disturbances which were assumed at the time to be of a vascular nature. In Case IV these disturbances resolved spontaneously and almost completely, histological examination showed that all the thorium dioxide was outside the vessels or in their walls In Case II however the disturbance was of much longer duration, the severe hemiplegia and aphasia which persisted after operation, and from which the patient has as yet only incompletely recovered, were out of all proportion to the severity of the operative manipulations and indeed began immediately after the injection of thorotrast. It appears certain that some of this delay in recovery has been due to the vascular occlusion described. In Case I death took place 21 hours after the injection and during this period the patient did not regain consciousness There can be little doubt that arteriography precipitated his collapse and death. In Case III there was no clinical disturbance referable to the injection of thorotrast; histological evidence of retention in this case is extremely *meagre*.

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† While this paper was in the press a fifth case was found in a woman aged 46 years Arteriography was performed when she was in extremis and death followed a few hours later At necropsy (P M 519/1933) a large ill defined homogeneous mass (5 by 4 7 by 4·2 cm) of pinkish grey granular tissue was found in the right basal ganglia and hypothalamus It had caused considerable distension of the left lateral ventricle especially of the occipital horn where the ependyma of the outer wall was elevated over a pocket of cerebro spinal fluid to form a cyst (3 cm in diameter) Microscopic examination of a section of the occipital lobe including the ependymal margin of this cyst shows conspicuous distension and occlusion with thorotrast of many capillaries and veins in both the cortex and white matter A few veins in the leptomeninges are similarly affected There are no changes in the perivascular nervous tissue The tumour like mass is histologically a granuloma which does not conform to any recognised type A few capillaries in it are also occluded with thorotrast Two additional features are therefore presented by this case (1) retention of thorotrast in cerebral tissue remote from the dominant pathological lesion perhaps determined in this instance by focal internal hydrocephalus and pressure from the adjacent cyst (2) the presence of thorotrast in veins of the leptomeninges

The lesions in these four cases were of a widely different character: an old cerebral hæmorrhage of considerable size a meningioma of the falx a chronic abscess of the temporal lobe, and lastly a secondary carcinoma of the cavernous sinus It is clear therefore that retention of thorotrast is not associated with any one pathological condition Although so divergent in this respect they possess one feature in common that in each there was considerable local compression of the tissues which may have caused some obstruction to the flow of blood In Case IV it is possible that a pre existing endarteritis fibrosa was responsible for or contributed to the retention Cases V to IX show that retention of thorotrast does not constantly occur in the neighbourhood of intracranial tumours Our failure to demonstrate it in two examples of spongioblastoma multiforme (Cases V and VI) may perhaps be due to the ill defined and infiltrating character of these tumours Cases VII and VIII on the other hand show that retention of thorotrast need not necessarily occur in the neighbourhood of a compressing tumour Further investigation is needed to elucidate the factors that may lead to retention in one case but not in another of similar pathological character

A second question concerns the subsequent fate of lesions in a non inflammatory area such as were described in Case II Will the blocked vessels in such areas regain their patency and will the perivascular areas of œdema and degeneration be restored to normal or will these areas be ultimately replaced by scar tissue?

Clearly thorotrast can no longer be regarded as an innocuous substance While we do not question its value in cerebral arteriography as a means of localisation and the fact that it can be used in a number of cases without immediate harm the possibility of two grave sequelæ needs consideration first disorders due to blockage of vessels which may lead to a permanent disability sufficient to spoil the results of operation and secondly the possible production of tumours in later years through the known radio active properties of thorium dioxide It may be argued that the amounts retained in the tissues are too small to produce this remote effect yet the production of sarcoma in the rat in approximately twelve months after the subcutaneous injection of as little as 0 6 c cm of thorotrast (Selbie 1936) suggests that this danger must not be ignored It is therefore important that an innocuous substitute for thorotrast should be found Until then we suggest that thorotrast should be used only for cases in which the exact diagnosis cannot be effected by other means

Summary

Four cases have been described in which histological evidence was obtained of retention after arteriography of thorotrast in the lumen or walls of cerebral vessels or in perivascular macrophages

Such retention appears to be liable to take place in the neighbourhood of compressing lesions such as meningioma, a large hæmorrhage, or chronic abscess

The aggravation of clinical symptoms that was observed in two of the cases, and retardation of recovery *from operation in one* may be attributable to this occlusion of vessels by thorotrast

The use of thorotrast is inadvisable unless exact diagnosis is unattainable without it

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POSTURAL DRAINAGE

By H V Morlock M C M D M R C.P Lond

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THE MILLER GENERAL HOSPITAL, GREENWICH AND
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(WITH ILLUSTRATIONS ON PLATE)

Postural drainage has long been used as a therapeutic measure in the treatment of bronchiectasis and lung abscess For many years however this drainage was very intermittent and dilatory the patients being advised to please themselves in the position of drainage for a short period on rising and again before retiring at night. This form of treatment was not valued very highly so that the advice about it was not particularly emphasised and therefore the patients were prone to neglect completely a procedure that was somewhat inconvenient to themselves. More recently the value of this method has been more fully appreciated and attempts have been made to make this method less intermittent, more prolonged and more valuable To this end the late Mr H P Nelson introduced his postural drainage bed and my late colleague Dr A J Scott Pinchin and myself suggested an inexpensive modification which the patients could take home with them and so enable them to make the treatment a matter of daily routine for years if necessary

THE METHOD

When patients suffering from pulmonary suppuration are admitted into hospital they are nursed in these postural drainage beds. At first they are placed in a position of drainage for a few minutes at a time but the period of drainage is rapidly increased and soon the patients will tolerate the position for one to two hours at a stretch eventually sleeping through the night, as well as spending a large part of the day in the position of drainage. When they leave hospital they are provided with a bed for use at home and so even during their hours of rest, they are definitely undergoing a valuable therapeutic measure For example a patient with bronchiectasis at the left base is advised to sleep on the right side with body flexed sideways at the hip the hip lying just below the apex of the drainage bed In this position the trachea would be inclined well downwards and would lie well below the level of the bronchiectatic area If the patient is not using a drainage bed he can obtain a satisfactory position by sleeping on the right side and raising the foot of his bed not less than 20 in. When this method is properly carried out there is no doubt that it is an extremely valuable therapeutic procedure, and I personally have used it in 43 cases of abscess and 69 cases of bronchiectasis with gratifying results If a faulty position of drainage is used during sleep, however, infected sputum may drain from the diseased lung into the main bronchus of the sound lung and become aspirated into the alveolæ, producing an acute pulmonary abscess in the area into which it has become aspirated. The following cases are examples of this —

CASE 1 —A man, aged 38, suffered from left basal bronchiectasis of some years' duration (Fig I on Plate) Admitted to hospital and instructed in postural drainage, in which position he slept and spent most of the days, "coming up" only for feeding and toilet On this régime and repeated bronchoscopic washouts he improved very considerably, the sputum becoming odourless and reduced in quantity On leaving hospital he returned to work and continued postural drainage at nights, lying on the right side, but he became careless about raising the foot of the bed After seven months he became acutely ill with increase in quantity and odour of his sputum Physical and radiological examination (Fig II on Plate) show a large lung abscess at the right upper lobe This was treated by bronchoscopic lavage, and cleared up in four treatments (Fig III on Plate) Recently he agreed to undergo the operation of lobectomy but owing to adhesions it was found impossible to remove the lobe complete He died 7 days later Post mortem there was extensive left lower lobe bronchiectasis but no evidence of the abscess in the right upper lobe

CASE 2 —A boy, aged 16, known to have had an atelectatic bronchiectasis for 8 years Admitted to hospital, he underwent the same régime as Case 1 and did very well On leaving hospital he continued nocturnal postural drainage by sleeping on the right side but without troubling to raise the foot of the bed sufficiently He was readmitted 5 months after leaving hospital with fever and an increase in the sputum Radiological examination showed an area of pneumonitis at the right upper lobe On treatment in the orthopnœic position with simple expectorant mixtures the pneumonitis cleared up

CASE 3 —A man aged 50, suffered from right lower lobe bronchiectasis He was instructed in postural drainage and carried it out at home during the hours of sleep, but was content to lie on the left side without raising the foot of the bed sufficiently Improved in health considerably for 5 months and then developed fever and an increase in sputum Returned to hospital, where physical and radiological examination showed an abscess cavity in the left upper lobe Patient refused to be readmitted The recent lung abscess is progressing favourably however on weekly bronchoscopic washouts, expectorant mixtures, and sleep in the orthopnœic position

COMPLICATIONS AND THEIR CAUSE

From a study of the notes of over 200 cases of bronchiectasis which I have personally treated in hospital, I have only found one case that developed a lung abscess in the sound lung, and that was in a child with bronchiectasis who had had an oleothorax performed on the affected side, and yet this complication occurred in three out of 69 cases undergoing postural drainage at home

I have never seen the complication while the patient was undergoing postural drainage under observation in hospital, although they were spending a considerably longer part of the day in the position of drainage than they did at home, when the period was confined to the hours of sleep and when the position assumed was not controlled This suggests that it is the faulty position during the night, when the cough reflex is diminished by sleep that is responsible for the development of the aspiration abscess All these patients admitted that they had failed to tip the thorax downwards and had been content to lie on the sound lung Fig IV will demonstrate the dangers of this faulty position.

In considering the ætiology of pulmondry suppura tion after operation under a general anæsthetic, there has always been two views one, that the pulmonary suppuration was the result of an emboli phenomena from the site of the operation, the other, that it was the result of direct aspiration of infected material from the upper respiratory tract during anæsthesia and the semi comatosed period following it

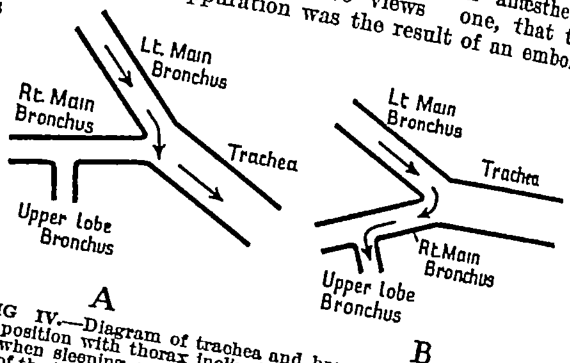

FIG IV.—Diagram of trachea and bronchi showing (A) corre position with thorax inclined well down (B) faulty positio when sleeping on the side without the downward inclinatio of the thorax.

It has already been demonstrated that lipiodol introduced into the upper respiratory tract during sleep will pass the glottis and will be found in the lungs when a skiagram is taken. The cases described here show that infected sputum allowed to collect in a dependant bronchus will produce a lung abscess These last two facts, in my opinion, lend consider able confirmation to the aspiration theory of pos anæsthetic pulmonary suppuration A further perus of Fig IVB, and the fact that the secondary absc developed in the upper lobe of the lowermost lung, show that during sleep the sputum within the bronchi obeys the law of gravity, and thus confirm the value of properly carried out postural drainage during sleep

CONCLUSIONS

From these cases it is concluded that the correct position for nocturnal postural drainage is one in which the right and left main bronchi are on the same horizontal plane, and in which the trachea is lower than the bronchiectatic area In other words, the patient should sleep on the abdomen with the ang between the groins and the abdomen on the ap of the postural drainage bed, or lie on the abdome with the foot of the bed raised at least 20 inches.

THROMBOSIS OF THE POPLITEAL AND FEMORAL ARTERIES

BY A M BOYD, M.B Lond., F R C S Eng
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(WITH ILLUSTRATIONS ON PLATE)

RECENT investigations suggest that thrombosis of the popliteal and femoral vessels is by no means an uncommon condition Sir Thomas Lewis has pointed out the extreme difficulty in distinguishing primary thrombosis from embolism, because a thrombus forms upon an embolus Serial section of the clot is seldom of any assistance in determining the sequence of events This paper is based upon seven cases of thrombosis of the popliteal and femoral vessels investigated in the wards of the surgical unit at St Bartholomew's Hospital.

ÆTIOLOGY

Primary thrombosis is undoubtedly more frequent than is generally supposed. The thrombosis is always preceded by disease of the vessel wall, which gradually narrows the lumen until finally clotting occurs There is thus time for the collateral circulation to develop a fact which accounts for the paucity of symptoms The popliteal artery is more commonly affected than the femoral. Sometimes both vessels are affected when the popliteal thrombosis is always the primary event

PATHOLOGY

The most common pathological change is an atheromatous degeneration of the vessel wall Thrombo angiitis obliterans is less often the cause and its incidence in the present short series gives an erroneous impression of its importance Thrombo angiitis in younger people is more often investigated thoroughly whereas older people with atheroma are less likely to come to the surgeon except for amputation In the popliteal artery the earliest changes are observed in the segment of the vessel which lies at the level of the condyles of the femur The lumen is narrowed until finally thrombosis takes place and the clot extends up to the origin of the anastomotica magna artery The reason for the localisation at these sites is probably concerned with strain The part of the popliteal artery where these changes are observed is the segment least supported and is constantly being strained by the movements of the knee The localised patches of atheroma in the femoral artery are less easily explained

SYMPTOMS AND SIGNS

The only symptom in an uncomplicated case is intermittent claudication usually mild but sufficiently severe to handicap the patient. The cramping pain in the calf on exercise is due to an insufficient supply of blood to the muscles since the collateral circulation is unable to provide the increased volume of blood demanded by the muscular effort In only 2 out of the 7 cases were there any symptoms at the site of thrombosis These two patients noticed a slight tingling sensation over the affected segment of the artery If in addition to blockage of the main vessels there is obliterative disease of the tibial or plantar arteries there will be rest pain usually in the foot and if the disease process extends to the arterioles there will be indolent ulceration and gangrene

On examination of an uncomplicated main vessel obstruction the leg and foot appear normal in colour while in the horizontal position There will, however be well marked postural colour changes the limb paling rapidly on elevation and becoming suffused on lowering it below the level of the heart The surface temperature taken at several points down the limb shows a normal temperature gradient falling steadily towards the periphery Pulsation is well marked in the femoral artery in Scarpa's triangle and is usually absent in the posterior tibial and dorsalis pedis arteries because of spasm or failure of transmission of the pulse wave owing to the arterial block Pulses should never be pronounced absent without examining the limb after warming either by a heated cradle or immersion in a bath at 45 C

Oscillometry is very valuable in finding approximately the site of an arterial block and Boulitte's modification of the Pachon oscillometer has been used in these investigations It is however no more than a rough bedside method and gives only approximate information Oscillations may be absent below a grossly diseased but still permeable segment of a vessel or if the walls are calcified

ARTERIOGRAPHY

Direct visualisation of the vessels is essential when a block is suspected in order to define its exact extent and to assess the condition of the collateral circulation

The patient is given morphine gr 1/6 and hyoscine gr 1/150 three-quarters of an hour before operation He is placed on the X ray table with the limb lying slightly flexed at the knee and with the outer side flat upon the table This position can be comfortably maintained by placing a sandbag under the opposite buttock Two intensifying screens are used and a film 15 by 12 in is placed under the limb including the lower third of the thigh and the upper two thirds of the leg The X ray tube is centred over the middle of the popliteal space The subcutaneous tissues and the sheath of the common femoral artery are infiltrated with 0·5 per cent novocain and the vessel exposed through an incision 1½ in long. A 20 c cm. record syringe is filled with Thorotrast and is mounted with a Moniz needle which is 0·8 mm internal diameter (B W G 18) and set in a mounting bent in two right-angles to allow it to be introduced obliquely through the arterial wall thus making a valvular opening and minimising the risk of hæmorrhage Then 16 c.cm. of thorotrast is injected as fast as possible and the exposure made as the last few c.cm. are being injected

Arteriograms are reproduced to illustrate the typical appearances of a blocked vessel and the characteristic tortuous hypertrophied collateral vessels (see Figures on Plate)

TREATMENT

Obliterative vascular disease has hitherto been considered outside the range of surgery and its treatment is still in the experimental stage Leriche first suggested excision of the obliterated segment on the grounds that the thrombosis caused irritation of the nerves in the vessel wall and produced spasm of the distal vessels

Arterectomy is followed by a dilatation of the collateral vessels and increased warmth of the limb It has been claimed moreover that it relieves pain

Intermittent claudication—CASE 1 A man aged 72 Referred for examination by Dr Worster Drought and complaining of intermittent claudication in both legs. Arteriography showed thrombosis of a segment of both superficial femoral arteries (Fig I on Plate) The collateral circulation and the condition of the distal vessels were good Segments of both thrombosed vessels were excised by Mr G C Knight with complete relief of pain. Sufficient time has not yet elapsed to say whether relief is permanent

Rest pain—In this condition there is disease of the distal vessels and therefore permanent relief cannot be expected. Temporary relief may be obtained by arterectomy

CASE 5—A chauffeur aged 49 Complaining of intermittent claudication in the calf of about one year's duration Six weeks before admission rest pain began in foot which became agonising and required morphia gr ¼ t.d.s in order to obtain any relief Arterectomy of a segment of left popliteal vessel was performed with complete relief of the pain. Unfortunately pain recurred three months later and eventually amputation was performed elsewhere

OTHER ILLUSTRATIVE CASES

CASE 2—A man aged 60 While rising from a chair he felt a cramping pain in his right calf Next morning he noticed his second and third toes were pale and cold but not painful This disappeared after a few days

Walking induced in the right calf typical intermittent claudication, which gradually increased Examination showed well marked postural colour changes Femoral, post-tibial, and dorsalis pedis arteries palpable, popliteal pulse absent Blood pressure 176/86 mm Hg Wassermann reaction negative (Fig II)

CASE 3 —A man aged 47 Gradual onset of intermittent claudication in right calf eighteen months ago Pains came on walking for decreasing distances, and the right big toe became discoloured and sore Examination showed postural colour changes in the right leg, the big toe was somewhat cyanosed and there was slight soreness of inner nail fold No pulsation felt in any vessel below the femoral Blood pressure 130/90 mm Hg Wassermann reaction negative (Fig III)

CASE 4 —A man aged 56 Gradual onset of intermittent claudication in right calf Some precordial pain on exertion Examination showed postural colour changes in both legs, absent popliteal and dorsalis pedis pulses Blood pressure 112/100 mm Hg Wassermann reaction negative (Fig IV)

CASE 6 —A man aged 36 Eighteen months before admission he began to suffer from pain in right instep and under heads of metatarsal bones, "as if arch was dropping," coming on after walking 500 yards Diagnosed and treated as an orthopædic condition Little toe became sore and eventually gangrenous, followed a few months later by the third toe On admission he had severe rest pains in his big toe, which was discoloured, the second and third toes were gangrenous No pulses were felt below the femoral artery in either leg Arterectomy of popliteal artery produced no relief and amputation had to be carried out (Fig V)

CASE 7 —A man aged 32 He complained of intermittent claudication in both calves for 14 years Recently pains had been worse, coming on after walking 20 yards, During the last three months he had constant burning pain in the right big toe and instep Examination showed postural colour changes in both legs no pulses could be felt in either lower limb below the femoral (Fig VI)

Analysis of Cases

Case	Age	Disease	Arteries blocked			Symptoms		
			Femoral	Popliteal	Distal vessels	Intermit claud	Rest pain	Gangrene
1	72	Atheroma	+	−	−	+	−	−
2	60	"	+	+	−	+	−	−
3	47	"	−	+	−	+	−	−
4	56	"	+	−	−	+	−	−
5	49	Thrombo angiitis obliterans	−	+	+	+	+	−
6	36	"	−	+	+	+	+	+
7	32	"	−	+	+	+	+	−

SUMMARY

Seven cases of main vessel obstruction are reported and analysed (see Table) While it is too early yet to speak authoritatively on the results of arterectomy the operation appears to offer the patient relief of his symptoms and time will show whether the benefit is sufficiently prolonged to justify the operation The likelihood of relief of symptoms and the ultimate prognosis varies with the level of the block. The more distally the block is situated, the graver the outlook

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CLINICAL AND LABORATORY NOTES

HERNIA STRANGULATED INSIDE A PROLAPSED AND INVERTED COLON

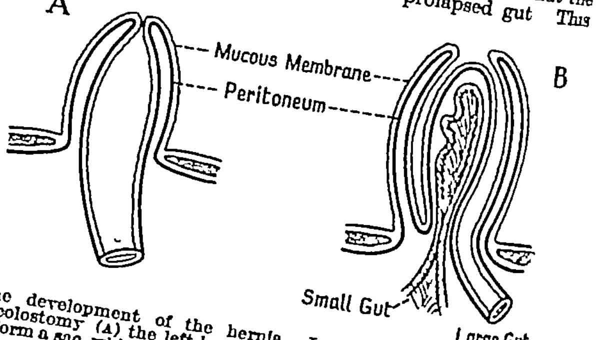
BY P G HARVEY, M.D, B S Lond.
HON SURGEON TO THE MONMOUTH HOSPITAL

A MAN aged 35, a postman, was admitted to the Monmouth Hospital suffering from a prolapse from a left inguinal colostomy For some years he had had a colostomy, and there had been a protrusion, about the size of a clenched fist, which was easily reduced and which caused no inconvenience as long as he wore a colostomy belt Whilst mounting his bicycle about 11 A.M he had had the feeling of something "giving away," had experienced considerable pain, and had found the protrusion greatly increased in size He had had nausea but had not been sick. The pain had got worse and he was seen by his doctor about 5 P M and admitted to hospital at 7 30

The patient's former history, obtained from the Ministry of Pensions, Newport, showed that when he was admitted to hospital after being wounded there was a large cavity in the sacral region The bladder and the lower end of the torn rectum seemed to lie at the bottom of the wound, the whole sphincter and lower 3 in. of the rectum having been carried away A left inguinal colostomy was performed. A large portion of bowel remained constantly prolapsed and could not be replaced In 1922 he was fitted with a colostomy plug and retaining belt which retained the artificial anus in position quite satisfactorily

On admission the patient showed severe shock From the left inguinal colostomy a large protrusion extended right across the abdomen It was about 15 in long and 6 in in circumference and very tense but the mucous membrane was not unduly congested. At the distal end there was a narrow slit, obviously the original opening into the gut from which a small quantity of fluid fæces was escaping The whole protrusion resembled a greatly exaggerated prolapsus ani A further examination under ether showed that the mucous membrane was attached to the skin all round the colostomy opening and that there was no sulcus I can best compare the condition present to a finger of a glove fixed to the colostomy opening

All attempts at reduction failed, and I decided that the best thing to do was to resect the prolapsed gut This



The development of the hernia In the original prolapsed colostomy (A) the left hand wall prolapses into the lumen to form a sac which contains small intestine

I was about to do when it struck me that it would be wise to open the very tense protrusion first I did so, and found that it consisted of the whole thickness of the gut, which was inverted so that the inner surface of the protrusion consisted of the peritoneal surface of the descending colon (see Figure) Inside the sac so formed I found 3 or 4 ft of intensely congested small intestine and a large piece of omentum These were reduced with great difficulty I then clamped and cut away the prolapsed gut, tied in a Paul's tube, and stitched the mucous membrane to the original colostomy opening The patient's condition on leaving the table was very bad.

On Dec 26th there was a slight discharge of fluid fæces from the tube and the general condition was still bad, but there was no sickness. He was given 0·5 c cm pituitary extract every four hours Next day his general condition was rather better but there was very little discharge from the tube On Dec. 28th he complained of nausea and distension of the abdomen There was no discharge from the tube his general condition was very bad, and there was slight delirium After the dressing he put his hand under the bandage and pulled the Paul's tube away I decided not to replace the tube but coaxed a 1 inch rubber tube into the opening of the bowel This was followed by the discharge of some pints of foul-smelling fluid fæces The tube was fixed to the bandage Next day the general condition was much better; the tube was draining freely and there was no *distension. The drain was removed on Dec 31st when* fæces were coming freely from the colostomy opening He was discharged from hospital on Jan 8th, and now seven years later remains perfectly well

This is a condition I have never heard of nor can I find a record of a similar case in any book on surgery that I have consulted

"FIXATION ABSCESS OF BONE DUE TO BRUCELLA

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For fifteen years, following a car accident a healthy athletic man moved about comfortably with a plated femur Two weeks of increasing disability and pain in the neighbourhood of the plate preceded admission At operation a mixture of pus and blood was found around the plate which was removed Brucella was isolated from this fluid Blood culture was sterile No history suggestive of undulant fever at home or abroad, was elicited The patient stated he had taken for years at breakfast each morning cereal food with unpasteurised milk from a local farm

He was a man aged 41 a clerk living in Hertfordshire He was admitted to St Thomas's Hospital on Nov 2nd 1936 complaining of pain in right thigh brought on by walking and was discharged on Dec 30th He had served in Gallipoli in 1915 and had had dysentery but gave no history of undulant fever at home or abroad His right femur was fractured in a car accident in 1921 and was plated Recovery was uneventful though the knee remained rather stiff A fortnight before admission the right leg hurt on walking and a few days later there was a swelling above the knee After a week the temperature was 10_ 5 F

State on admission—Healthy and athletic appearance Temperature 99·8 F Pulse rate 88 Left leg normal Right leg: no wasting scar extending over mid third of lateral side of right thigh tender over mid third on palpation limitation of movement of knee flexion to 130 Urine: nil abnormal Pathological report: leucocytes 6000 (polymorphs 46 per cent small lymphocytes 41 per cent large hyalines 12 per cent mast cells 1 per cent) Radiography: no evidence of active infection plate present

Operation—A cavity over the plate contained 2 oz. of pus There was some necrosis around the plate some screws came out easily others not The plate was removed and the bone scraped to remove débris a drain was left in

Subsequent progress—The temperature which was 101 F on the day after operation, fell to normal. There was a discharge of bloody fluid from the drain followed by pus for two weeks The drain was taken out in four days On section tissue from wound showed pus blood and foreign débris. The pus removed at operation (mainly blood) gave a pure culture of brucella A blood culture ten days after operation was negative The spleen was not palpable the lymph glands were not enlarged and the patient was discharged fit four weeks after operation

The *serological findings* were as follows —

—	Titre.	Agglutination.
Serum of patient on Oxford type organisms	1/500	Caprine incomplete Bovine: complete. Porcine faint trace
Serum of patient on laboratory organisms	1/500	Bovine: marked Caprine marked
Serum of patient on organism of patient	1/1000	Complete
Organism of patient on laboratory serum	1/1000	Complete

The *culture media* used were Dorset's egg and blood agar Later the organism grew on agar alone (in normal atmosphere) The growth was obvious in four days Culture in sugars showed progressive alkalinity

It seems that in this patient brucella, circulating in the blood without giving rise to recognisable symptoms produced a fixation abscess about the plate on the fifteen years old fracture The patient's serum strongly agglutinates his own and standard brucella, but blood culture was negative The variety is probably *Brucella abortus*

I wish to thank Mr B W Williams for permission and encouragement to publish this case

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PHENOBARBITONE—A CAUTIONARY NOTE

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Phenobarbitone—more familiar under such names as Luminal and Gardenal—has very largely replaced bromides in the routine treatment of epilepsy Where it is effective it usually acts promptly and the attacks cease within a day or two sometimes never to recur More often tolerance sets in within a few weeks and then an increased dose may again abolish the fits Renewed recurrence after a further period of freedom may tempt the doctor to increase the dose still further with the result that many patients are taking 4 or 5 grains a day or even more

Experience has taught me that such patients are living dangerously The omission or reduction of their medicine is liable to be followed within a very few days, by a grave increase of fits or even by status epilepticus

Some hundreds of patients have been admitted to the Lingfield Colony who were taking phenobarbitone at the time of admission. The amount which they were taking has shown astonishing variation One tenth of a grain is the smallest daily dose of which I have a record but at the other end of the scale I have met with 6 grains a day on three or four occasions The practice of starting with a small dose and working upwards is obviously a sound one but I suggest 3 grains a day as a maximum The practitioner who goes beyond this should recognise that unless his patient is prepared to continue the dose indefinitely, there may be considerable risk when the time comes to reduce or withdraw the drug In any case, I suspect that large doses taken for long periods may be detrimental to the patient's mind, and, if they became general, would bring phenobarbitone into the same sort of discredit that bromide got into a generation ago

Increase of fits due to phenobarbitone deprivation or reduction is also liable to occur in patients whose fit-incidence has not been affected by the drug Thus a trial period may leave the patient definitely worse off than before

Further may I suggest the necessity of close observation of all patients, especially children, who are given phenobarbitone ? If 1 or 2 grains a day make them sleepy or dull, no notice need be taken, for the sleepiness will almost certainly pass off in a few days More often the patients will be brighter, the normal in intelligence and behaviour, this may be due to reduction or arrest of fits in some cases. But quite a number of children, as many as 20 cent in my experience, become more irritable and difficult when they are taking phenobarbitone. The condition may be a temporary one, and pass in a few days or weeks, or it may persist and grow, occasionally giving rise to something approaching mania This drug irritability is a very definite condition, and must be watched for It is not due to cessation of fits, because it is seen also in children whose fit-incidence is unaffected. Experience leads me to believe that there are many epileptic children whose grave conduct difficulties are directly caused or much increased by the phenobarbitone they are taking every day

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF SURGERY

At a meeting of this section held on Feb 3rd, the president, Prof G Grey Turner being in the chair, a discussion on

Injuries of the Peripheral Nerves

was introduced by Mr Harry Platt (Manchester) who freely illustrated his subject on the screen. A new generation of surgeons, he remarked, was coming into the field who had not had the opportunity of the great experience which the war afforded In the month of February, 1920, for example, he had himself explored 41 injured nerve trunks, whereas in civil practice in all the years since he had encountered only 89 cases of the kind. In that number the nerves involved were ulnar 55, median 15, brachial plexus 9, external popliteal 5, musculo-spiral 4, anterior tibial 1 In 39 the injury to the nerve was a complication of fracture or dislocation, in 32 of a penetrating wound. Many cases of nerve injury in civil life did not come to the operating theatre These lesions owned a variety of causes, and the clinical problem was protean In simple fractures peripheral nerve complications were uncommon In some cases the nerve involvement was only evident in the early weeks following injury

In dislocations and fracture dislocations of the shoulder joint, except for circumflex palsy, it was rare to find nerve complications In circumflex lesions, relaxation and re education resulted as a rule in recovery in three to four months In primary lesions of the infraclavicular plexus the prognosis was not unfavourable In true secondary lesions associated with an unreduced dislocation recovery was often delayed on account of the strangling effects exerted by the extensive scar tissue which formed round the dislocated head. The nerve trunks should then be freed without delay, either by open reduction or by excision of the head. Musculo-spiral palsy might be primary or secondary The former was usually the result of direct impact of a bony fragment, it might follow over zealous effort to manipulate the fractured portions into exact alignment Secondary lesions were due to the nerve trunk adhering to a projecting fragment or irregular bony surface, and the nerve trunk might be gradually obliterated by dense cicatricial tissue. As the musculo-spiral lesion accompanying simple fractures often recovered spontaneously, conservative measures should be tried. Nerve complications rarely followed fractures of elbow, nerve lesions did occur in fractures of the lower end of the humerus or in subluxation of the elbow joint. In 22 cases of epicondylar fracture ulnar nerve showed primary damage in all. Secondary lesions became evident three to four weeks after the date of the injury, and they were met with in both internal epicondylar and supracondylar fracture Owing to its more protected position, the median nerve was seldom implicated in elbow joint fractures, occasionally the nerve trunk was impaled on the projecting lower end of the shaft in a supracondylar fracture with gross backward displacement of the lower fragment. Nerve injuries from penetrating wounds were rarely met with above the level of the lower third of the forearm. When infection had already become established, failure of regeneration after primary suture was almost certain, any attempt at nerve repair should be put off until the condition of the wound had improved. Traction lesions of the brachial plexus were of two kinds those seen in the infant following difficult birth, and the adult cases, usually the sequelæ of road accidents. In the infant spontaneous recovery, partial or complete, usually occurred in the first few months. The plexus injuries in the adult were much more severe

Sir Robert Stanton Woods spoke of the help given by electrical testing in determining the best form of treatment. In every such injury a full and accurate history was most important The musculo-spiral, he had found, was one of the most recuperative nerves in the body Examination was of no assistance in the days immediately following the presumed injury, for electrical reactions gave indications solely of interference with the functions of excitability and conductivity The only positive proof of the hysterical nature of a paralysis was the muscle response to electrical stimulation, and in a paralysed limb the organic and the functional could be accurately segregated. Electrical testing would differentiate between muscles which failed to function because of pain and those which were affected by a lower motor lesion. He agreed with Lewis Jones that any deviation from the completely developed reaction of degeneration was important, sluggish response to stimulus by the direct current was diagnostic of a lower motor lesion, even in the presence of faradic excitability

Mr F H. Bentley described some experiments he had been carrying out at the Royal College of Surgeons on the surgery of nerve-roots. It was found that when a nerve was sutured union took place by scar formation the scar filling the interstices and so obstructing the newly growing nerve fibres Direction was given to the nerve fibres by the scar tissue rather than by a new organised pathway When accurate approximation of the nerve ends was not secured, there was a relative increase in the amount of scar tissue formation Silk excited much less tissue reaction than did any other suture material.

Prof J **PATERSON ROSS** said that in 5 cases of median nerve injury and 12 of ulnar nerve damage the effects following secondary suture were not so severe as a study of Sherren's work led one to believe Nerve repair operations should he thought, be carried out by surgeons experienced in nerve surgery

Mr F M. **NICHOLLS** agreed that nerve repair should be placed in the category of major operations Some failures were attributable more to inexperience than to the anatomical conditions of the case

The **PRESIDENT** also emphasised the delicate problems which arose from injuries to nerves consequent on fractures In some cases many months were required to re-establish function.

ASSOCIATION OF CLINICAL PATHOLOGISTS

THE tenth annual meeting of the Association of Clinical Pathologists was held at the British Postgraduate Medical School on Saturday Jan. 30th. The new president of the society Dr S C **DYKE** referred to the great loss sustained by the death of *Prof E H Kettle whose place as chairman of* the meeting was taken by Dr **JANET VAUGHAN**

Laboratory Diagnosis of Gonorrhœa

Dr G W **GOODHART** who opened the first discussion by a communication on the

DIAGNOSIS OF GONOCOCCAL INFECTION BY FILMS

said that there had been no important alteration in technique during the last 25 years most people now used some modification of the original Gram's method for staining but for the particular purpose under consideration there was still a good deal to be said for the older technique as it avoided the danger of over decolourising with alcohol. He had never departed from the admirable practice insisted upon in his early days by Prof Eyre of reporting only what he found and never saying that gonococci were present when from the nature of the investigation a definite bacteriological diagnosis was manifestly impossible Several workers had published figures to show the comparative value of smears and cultures in diagnosis. Everything depended on the material one was working with Most of the statistics came from workers in venereal disease clinics or from research departments. In the former there was a reasonable presumption that the material sent for examination came from a patient exposed to risk and in the latter optimal conditions for successful culture could be arranged Much of the work of the ordinary practising clinical pathologist had to be done under very different conditions Dr Goodhart's own views had undergone a complete change since he had been working in the hospitals of the London County Council, and he now regarded Gram negative cocci other than gonococci to be such frequent inhabitants of the urogenital tract as to make the diagnosis by film alone highly dangerous especially in vulvo vaginitis in children. Most workers who had investigated cultural results carefully had found a number of pseudo gonococci and the main purpose of his communication was to illustrate this point He then described ten cases from which he had isolated Gram negative cocci which from their cultural characteristics were clearly not gonococci according to prevailing views In some of these cases smears had shown typical Gram negative intracellular diplococci in others not even pus cells were present His experience suggested that it was often difficult to make an accurate diagnosis of gonococcal infection even by culture and that it was practically impossible by film alone

Dr **JOHN OLIVER** spoke on the

DIAGNOSIS OF GONORRHŒA BY CULTURE

He described two types of transparent culture medium for this purpose Hydrocele agar was best where this could be prepared without undue difficulty but the egg albumin medium of Price gave almost equally good results and was usually less difficult to make up Dr Oliver emphasised the need for immediate inoculation of exudates and the desirability of incubation without undue delay at temperatures lying between 35 5 C and 36 5 C The retention of moisture in the culture tubes was important for desiccation was the most important factor in the death of gonococci in swabs A replacement of some 8 or 10 per cent of atmosphere by CO_2 was of distinct advantage in the culture of gonococci Dr Oliver explained the oxidase reaction as a means of diagnosing the presence of gonococci in mixed cultures and finally discussed very briefly the fermentation reactions of the organism

COMPLEMENT FIXATION TEST

In the absence of Dr **ORPWOOD PRICE** on account of illness Dr **CUTHBERT DUKES** gave a brief account of Price's method of performing the complement fixation test and discussed the general significance of the reaction. It was important he said to bear in mind that this serum reaction does not show the presence or absence of gonococci in the tissues it only registers the presence or absence of gonococcal antibodies in the blood. The amount of such antibody might be expected to vary with the amount of toxin absorbed It was obvious that if the gonococcal lesion is open with plenty of opportunity for free drainage there is comparatively little opportunity for toxic absorption The fact that this condition existed in simple gonococcal urethritis explained why the complement fixation test remained negative for the first week or two of the disease. If the disease spread to the seminal vesicles the toxic products were unable to drain efficiently and in the presence of a closed infection antibody production increased rapidly Thus a positive gonococcal complement fixation test might be taken as evidence of present or immediately previous gonococcal infection but a negative test did not include the possibility of gonorrhœa The possibility of cross fixation with antibodies of allied bacteria such as the *Micrococcus catarrhalis* the meningococcus and *Micrococcus flavus* had often been raised and the evidence on this question has not been altogether conclusive Dr Orpwood Price had carried out a series of experiments in which he prepared antisera against the gonococcus, *Micrococcus catarrhalis* and *Micrococcus flavus* by injecting rabbits with those bacteria. The sera were then tested against gonococcal antigen in serial dilution ranging from 1 in 10 to 1 in 80 as for a complement-fixation test These experiments showed that a weak degree of cross fixation with the antibodies of

Micrococcus catarrhalis is liable to occur. Dr Dukes referred also to Dr Price's views on the gonococcal complement fixation reaction as a test of cure. As long as a patient had a persistently positive complement fixation test he should be regarded as infective and remain under medical supervision. When the test became negative after having previously been positive this in itself must not be taken as evidence of cure. In any test of cure both clinical and pathological examinations must be considered, and it was suggested by Price that if the patient showed no clinical signs or pathological evidence of the disease, normal life (with the exception of coitus) should be allowed for one month. Then the patient should be re examined and all tests repeated. If these still yielded negative results final tests should be made after a further month of normal life before the patient was regarded as cured. The gonococcal complement-fixation test was not a substitute for other criteria of cure but should always be supported by the results of smears and cultures.

A discussion on the

Diagnosis of Syphilis

was introduced by Dr J G **Greenfield** with a paper entitled

THE CEREBRO SPINAL FLUID IN NEUROSYPHILIS

He pointed out that the four reactions proposed by Nonne in 1909 still remain the most important for the examination of the cerebro spinal fluid in syphilis: the cell count, globulin estimation, Wassermann reaction in blood and cerebro spinal fluid, and a colloidal reaction. Dr Greenfield discussed these in turn and then took up the question of the cerebro spinal fluid at various stages of syphilis and its relation to treatment. In the secondary stages of syphilis meningeal reactions might occur in a small proportion of cases, but since the majority were not followed by neurosyphilis it seemed unnecessary to puncture patients before or during treatment unless there were clinical signs of syphilitic meningitis, in which case lumbar or cisternal puncture is a curative measure.

Only those cases in which meningeal reactions persisted into the latent period appeared likely to develop neurosyphilis, and therefore the best time to examine the cerebro spinal fluid in the earlier stages was a year after a complete course of treatment or at the end of the third year after infection. More frequent punctures during the secondary stage were not contra indicated, but the appearance and disappearance of meningeal reactions should not be allowed to influence treatment.

In the later stages a certain diagnostic and prognostic value attached to the rapidity with which the W R in the fluid cleared up under treatment and to variations in the Lange reaction. Although it was generally true that in meningovascular forms of neurosyphilis the W R in the fluid cleared up rapidly under treatment, there were many chronic cases of meningeal syphilis in which this rule did not hold good. In tabes and general paralysis the W R in the fluid was very stable and usually only weakened along with the weakening of the W R in the blood. But after malarial treatment in favourable cases the W R in the fluid might clear up fairly rapidly while the blood W R remained strong. In the latter type of case examination of the fluid at intervals was of definite prognostic value, and enabled relapses to be detected and treated at an early stage. Variations in the Lange reaction were also of value in prognosis, weakening of the reaction in a general paralytic after treatment with malaria or tryparsamide being usually of good omen, while a progressive strengthening of the reaction in cases of tabes or old standing syphilis pointed to the onset of general paralysis.

Dr H C **Lucey** read a short paper entitled Wassermann Snags in which he gave his experience of certain practical difficulties in the performance of this test and ways in which they might be overcome.

Dr A G **Signy** introduced a discussion on

CONGENITAL SYPHILIS

He described various methods for collection of reasonable specimens of blood from children: the puncture of the anterior fontanelle, of the external jugular vein, and of the internal jugular vein. He emphasised the importance, in testing the blood of children, of doing at least two types of tests—a recognised complement fixation as well as a recognised precipitation test. He discussed in detail the interpretation of the results of these tests, particularly the anomalous results occasionally met with. Before a diagnosis of syphilis is made from serological evidence alone the test must be repeated, especially in young infants who are quickly made negative on treatment. A provocative injection of arsenic was valuable when positive reactions were doubtful or weak. The histology of congenital syphilis was characteristic in many organs, especially the liver. Dr Signy discussed the anæmias of congenital syphilis and said that the children improved very rapidly in every respect under specific therapy.

Dr **David Nabarro** said that at the Hospital for Sick Children, Great Ormond street, more than half of the congenital syphilitic infants seen showed positive findings in their cerebro spinal fluids. As a rule this condition responded readily to the recognised treatment by injections, and in his experience the fluid which had once become negative very rarely relapsed. In most of these cases the neurosyphilis was latent, but sometimes there were signs or symptoms pointing to neurosyphilis, such as hydrocephalus, convulsions, and possibly mental retardation. In his view lumbar puncture should be carried out in every case of congenital syphilis in order to detect latent neurosyphilis, especially in rather older children, and to treat it, so as to prevent such untoward events as hemiplegias and meningovascular lesions leading to mental degeneration. In his experience the treatment of neurosyphilis in children with clinical manifestations was most disappointing, and on that account he strongly urged the routine lumbar puncture of all congenital syphilitics.

In reply to a question whether he had seen the symptoms in pregnant mothers diminish in intensity, Dr Nabarro said that most syphilitic mothers showed no signs or symptoms of the disease with the exception of a positive reaction in the blood. It had been stated that the blood reaction became negative during pregnancy, and this had been adduced as a reason for not doing routine blood tests on expectant mothers, and particularly those who attended antenatal clinics. In Dr Nabarro's experience the W R remained positive in pregnancy and often quite strongly positive, though in some cases it did diminish in intensity, doubtless owing to the treatment the mothers were having. During the last few months two infants had been brought to the clinic at Great Ormond street, both of them syphilitic, whose mothers had attended antenatal clinics during pregnancy, but had not been tested or treated. In his opinion every expectant mother should have a blood test

Demonstrations

In the afternoon the following demonstrations were given Dr E J KING demonstrated microchemical methods applied to capillary blood, for the estimation of sugar urea, uric acid, creatinine and chloride.—Dr JOHN GRAY illustrated by museum specimens and histological slides the main types of Bright's disease —Dr JANET VAUGHAN demonstrated material obtained from sternal marrow puncture in the following cases: (1) normal marrow (2) Addisonian pernicious anæmia (3) myelomatosis (2 cases) (4) secondary carcinomatosis In the three last cases the biopsy had enabled a correct diagnosis to be made. She also described the technique employed and the type of instruments used.—Dr A A MILES and Dr J GRAY demonstrated the post mortem and bacteriological findings in two cases of endocarditis due to infection with organisms provisionally identified as *Hæmophilus influenzæ* The main interest lay in the organisms isolated which corresponded closely with strains isolated in the last few years from similar cases Dr Miles and Dr Gray showed the cultural and biochemical characters of the organisms a rapid bacteriological test for a preliminary differentiation of these organisms from true influenza organisms and an important fallacy in the preparation of yeast extract, peptone water and sugars

MEDICAL WOMEN'S FEDERATION

AT a meeting of the London Association held on Jan. 26th Miss E C LEWIS the president being in the chair Dr ANDREW TOPPING spoke on the

Modern Treatment of Fevers

Scarlet fever he said, was the commonest of the acute exanthemata, but it presented great difficulties to the administrator In the early days of fever hospitals many hoped that the incidence would be reduced The mortality had been lessened and for the past thirty years the illness had been extremely mild but the question now had to be faced: should patients be treated in hospital? Scarlet fever was one manifestation of streptococcal infection probably many of the 28 recognised kinds of streptococci might cause it in some cases and (say) streptococcal throat infection in others isolation of scarlet fever patients could not prevent other cases occurring and some undoubtedly became infected with other strains while in hospital. The one big modern innovation in treatment was the use of antitoxin Nowadays every serious case received it and in some hospitals every case however mild the illness was cut short by it desquamation did not occur there were fewer sequelæ Prontosil first used in Japan and then in Germany was the one drug available which showed promise of being effective against several kinds of streptococci.

In measles convalescent serum had no curative value Intensive treatment with vitamins A and D had been tried out by Dr Helen Mackay who had reluctantly come to the conclusion that it made no difference Eye and ear consultants should be called in early to eye and ear cases before the conditions were firmly established The London County Council were setting up country homes for these cases so that they might lead a more normal convalescence Whooping-cough cases seemed to be free from ear complications and it was thought that if the children laughed ran about and coughed the pharynx was kept clearer and the ears recovered more quickly Oxygen had proved very useful for pneumonia the L C C had twenty tents in use and planned to have twice as many before the next epidemic expected, he believed, to start on Nov 14th Undoubtedly patients with whooping-cough should be granted admission to hospital much more readily than they were The difficulty was to convince parents and local councillors of the fact that children were not infectious for more than a fortnight after developing the whoop Treatment had been attempted with cow serum. Direct plates revealed the bacillus a month or six weeks after the whoop had appeared but that was not evidence of infectivity; probably a virus was either necessary for the invasion by the bacillus or else was the causal agent itself. Probably Luminal sodium was the best drug but its dose had to be adjusted with great care according to the child's weight drowsiness must be avoided.

Diphtheria could be stamped out by an efficient immunising campaign The principal causes of failure in its treatment were failure to recognise the condition reluctance to admit the diagnosis and reliance on swabs It was axiomatic that the death rate varied inversely with the length of time between the onset of the illness and the giving of a sufficient dose of antitoxin The size of the first dose was of great importance work done all over the world had shown that the toxin once fixed in the tissues was impervious to antitoxin The gravity of each case had first to be assessed: whether it was the first second, or third day and whether there was marked toxæmia. Sixteen thousand units were enough for mild cases but where there was smell bull neck, or the likelihood of marked toxæmia 60 000 to 100 000 units should be given intravenously immediately A booklet issued by the L C C. (price 3*d*)[1] gave full details of the technique. Intubation had supplanted tracheotomy in most instances The Drinker respirator although a cumbersome apparatus was giving almost uniformly good results in the treatment of diaphragmatic paralysis

Cerebro spinal fever was now diagnosed more satisfactorily by blood culture than by examination of the cerebro-spinal fluid by the latter method a mild or fulminating case might be missed while blood culture gave a positive result in almost every case. The modern treatment was to insert a special lumbar puncture needle and to leave it there to allow a continuous drip of cerebro spinal fluid Antitoxin was given into the blood stream.

In America vaccination against small pox was now being carried out by intradermal injection with good results He felt there was no evidence that the present mild form of small pox would breed true He had seen one confluent case whose only apparent contact had been an ordinary mild one

THE PROPHYLACTIC ASPECT

Dr E ASHWORTH UNDERWOOD said that attempts at producing immunity had been made many centuries ago when physicians exposed their patients to diseases in the hope that they would catch a mild form of them Jenner's inquiries were the first scientific step towards specific prophylaxis Of the five principal diseases against which artificial immunity was being tried here diphtheria was so far the most favourable At the time when the Medical Research Council published a monograph on it in 1923 many people had felt confident that the use of antitoxin could keep the mortality down to the low figure of about 4 per cent Then reports from Berlin and

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[1] See *Lancet* 1936 2 1187

Budapest of more frequent severe cases caused disquiet and about five years ago such cases became common in this country The Schick test was the most reliable guide to individual immunity In using it the full dose had to enter the arm, preferably into the skin, but the speaker was not convinced that if some of the fluid went into the subcutaneous tissues the result was altered Pseudo reactions were not so common as they had been seven years ago They were commonly held to be detectable on the fourth day but he thought the test should be repeated when doubtful. The Moloney test consisted in observing the reaction produced to the intradermal injection of dilute toxoid, the reactions resembled those of the Schick test A positive result denoted sensitisation of the individual by the products of the diphtheria bacillus and had been obtained in 80 per cent of his cases who reacted strongly to toxoid treatment

The first method of immunisation used was injection of toxin fully neutralised with antitoxin, but the danger of freezing or faulty mixing setting free unneutralised toxin caused the method to be given up It was succeeded by toxoid antitoxin mixture (T.A M) which the speaker thought should now go into honourable retirement Among its successors were formol toxoid, alum toxoid (formol toxoid precipitated by alum and acting over a long period because of its insolubility), and toxoid antitoxin floccules (T.A F) The first two were apt to cause reactions but acted relatively quickly, the third was undoubtedly the simplest and most innocuous prophylactic known, but it was somewhat slow The relative advantages of one and multiple shot methods had been much discussed, if the resulting immunity were compared, two or three shots would always win The speaker showed by graphs how incidence and death rate fell with a rising proportion of the population immunised He considered that at least 30 per cent of pre school children should be treated to keep the disease in check.

Immunity to scarlet fever was not so satisfactory Five doses were necessary and then apparently only protected against erythema and not against invasion, the patient might still go about with a streptococcal infection of the throat

Two types of serum were in use for protection against measles, the convalescent type obtained from patients between the seventh and tenth days of illness, and the adult serum from healthy people who had had measles Protection could be conferred for a few weeks by either type if given within six days of exposure, attenuation could be achieved by a full dose given later or by a half dose within the six days The modified attack gave immunity for life

In reply to a question from Dr D McNair about a Schick reaction appearing on the sixth day, Dr Underwood said that a delayed reaction was recognised.—Miss G M Sandes asked about the use of placental extract in the treatment of measles, to which Dr Underwood answered that he thought it had not been a great success —In reply to Dr A F Judd, he said measles serum was procurable from Messrs Burroughs Wellcome, it had to be stored on ice In practice 10 c cm. of parental blood given into the child's buttock would prevent or attenuate the illness

Dr Ursula Blackwell, in moving a vote of thanks to the speakers, mentioned that her experience at a fever hospital confirmed what Dr Underwood had said

MEDICAL SOCIETY OF LONDON

At the meeting of this society on Feb 8th, with Sir William Willcox, the president, in the chair, a discussion took place on

Treatment of Facial Paralysis

Dr Macdonald Critchley, in opening, said that to the neurologist the treatment of this condition could usually be summarised as consisting of massage, electrical treatment, and the use of a facial splint But the end results were found to differ in spite of a similarity in the treatment adopted. Traditionally Bell's palsy was described as an acute inflammatory swelling of the nerve trunk and its interstitial tissue as a result of exposure to cold, with resulting strangulation of the nerve by the bony walls of the Fallopian canal. Probably these assumptions were incorrect in most cases of Bell's palsy, since very often there was no supporting history, and in any case it was not clear why only one side should be affected—a main feature of the condition The late James Collier and others taught that a proportion of cases of Bell's palsy were due to a neuro fixating virus, as in the facial palsy from known neurotropic virus disorders, such as tetanus and rabies R S Aitken and R. T Brain had found, by means of the complement-fixation test of Bedson and Bland, that in some cases (4 out of 22) the blood serum contained antibodies to herpes zoster, showing that Bell's palsy was sometimes a virus disease It would be interesting to know how often the conditions were related. Dr Critchley thought it safest in the present state of knowledge to regard Bell's palsy as a mere symptom with probably several causes Good end results were obtained in 80–85 per cent of all cases, if the rest had any special features these would be valuable in prognosis A Tumarkin had suggested that pain and loss of taste gave a grave prognosis in the early stages, without them the patient had a 25 to 1 chance of recovery of function Dr Critchley's experience of cases with known ætiology suggested that most of those with the Gowers Hunt syndrome did badly, while other instances of virus affections soon made an excellent recovery Much sagging of the face from permanent atonic paralysis proclaimed failure of treatment, but early use of a facial splint, with more vigorous electrical stimulation would probably have prevented this When such a deformity was established, he assumed that plastic surgery offered the only alleviation In the course of recovery there might occur spontaneous facial twitchings to be treated with a partial ablation of the nerve function by a minute injection of alcohol. Tonic facial spasm was a very common sequel, but it needed treatment only when extreme and deforming, this consisted of massage and manual stretching of the muscles that were contracted Facial synkinesia often developed, and might be embarrassing Finally, Dr Critchley asked how acute cases of Bell's palsy might be treated in which no good end result seemed likely from electrical testing and on clinical grounds.

OPERATIONS

Sir Harold Gillies described the use of the temporal muscle as a fake mover of the face Plastic operations, he said, were indifferent palliatives in comparison with what he hoped the nerve grafting and decompressing operations would produce The time for the plastic surgeon to intervene was when the face was completely unresponsive or "dead", indeed, he felt that his own usual function was that of facial undertaker The facial slings which were put in to grip the muscles were surgical splints and more efficient than the usual mechanical aids; they might prevent in some cases, over stimulation by electrical practitioners of a muscle that was already knocked out. The operation was simple the complications were not serious, and if in spite of the bad prognosis the nerve should happen to recover the bands would have done nothing but accelerate recovery Patients thus treated were perhaps the most grateful of those he met for anything done to improve their appearance definite mental trouble sometimes supervened. The operation, which he demonstrated with a film added the temporal muscle s movement to the sling and the patients could afterwards use the biting grip and move the face.

Mr **Terence Cawthorne** speaking on nerve grafting said that until recently the most favoured operation was anastomosis in the neck and remote from the site of injury in the temporal bone of the distal end of a divided facial nerve with the central end of some neighbouring nerve. The results showed however that a satisfactory return of facial movements could only be expected by exposing the nerve at the site of injury and by restoring anatomical continuity Relief of compression or restoration of continuity between the divided ends, either by direct apposition or a homogenous nerve graft were the methods of choice. To ensure the best functional results the affected nerve should be exposed as soon as practicable In mastoid operations the facial nerve was very vulnerable and easily damaged by curette or gouge by a fracture fragment from the bony canal, or when exposed, by bruising with instruments or gauze swabs The best guide to the severity of the injury was the length of time between the operation and the onset of the paralysis If this was short, it was certain that the injury to the nerve was severe, and surgical exploration of the nerve should be carried out as soon as the patient s condition would admit. This was important as the degree of recovery after the facial nerve grafting depended largely on the interval between the injury and its repair Failure to recover at the end of a month should lead to a consideration of operation especially if the nerve trunk did not respond to the faradic current.

The first step was to expose the nerve at the site of injury this would enable the surgeon to know whether and what treatment was needed to restore continuity To bridge the nerve gap Ballance and Duel—to whom Mr Cawthorne paid a tribute for their pioneer work—had shown that the only material worthy to be considered was a piece of living nerve usually taken from the intermediate cutaneous nerve of the thigh being cut and allowed to degenerate in situ for two or three weeks The results had been remarkably good In facial palsy not due to trauma that associated with suppurative ear disease was important If otitis media was of long standing extension of the disease to the facial canal and perhaps to the labyrinth must be borne in mind then a radical mastoid operation with thorough removal of the diseased bone was called for Generally however there was no obvious local injury or disease and these cases were styled Bell s palsy It was the rule for these to clear up spontaneously He described the technique of nerve exposure and repair operations and showed a film.

Mr **Dickson Wright** said he had had to deal as a surgeon with many cases of facial paralysis They resolved themselves into medical and surgical types In the former Bell's palsy Dr Critchley had suggested that the idea of a swelling of the nerve might not be tenable, but the reply was that good results had followed decompression of the nerve The Ballance Duel operation was useless in facial clonic spasm and in some cases arising from fracture of the base He agreed that the operation illustrated by Sir Harold Gillies was best in cases of dead face in which the muscles showed no sign of recovery Mr Cawthorne had considered that when all galvanic response had disappeared no attempt should be made on the nerve but he himself had had a case of a withered arm after injury to the brachial plexus Amputation was discussed but it was deferred when some time later the muscles of the arm began to show a return of power He concluded with a film on the operation of hypoglossal facial anastomosis

Mr **Cecil P G Wakeley** said he had worked on this subject with the late Sir Charles Ballance for ten years and they did together 14 cases of hypoglossal facial anastomosis in 12 of which the results were quite good. In some of their later cases only half the split hypoglossal nerve was used and the results were as good as when the whole nerve was employed. The ensuing paralysis of the tongue was minimal.

DISCUSSION

Sir **Harold Gillies** referring to the Ballance Duel operation asked whether Mr Cawthorne thought a nerve graft could be put with impunity into a pool of pus as in a suppurating mastoid cavity He knew of no other graft which would live in such conditions.—Mr **Donald Wheeler** agreed that in acute mastoid cases the grafting during the process of suppuration was futile in such circumstances he had not known a case do good.—Mr **G H Livingstone** said he had helped Prof Duel with one of his cases of grafting in which there had been no result for nine months, after which recovery had been progressive —Mr **Harold Kisch** said he had operated upon four such patients but two were too recent to speak of yet. The other two were successful the first being in a child aged two after 6 months the second a woman aged 23 after 18 months

Dr **Critchley** in reply said he was not yet clear about the absolute indications for operation in Bell s palsy He was aware that loss of faradic response persisting to the end of the second week could be taken as an indication but he doubted if this were true He had hoped that someone skilled in electrotherapy would have given enlightenment on this point. There were cases showing true reaction of degeneration at the end of the second week which yet made a good recovery and not all those who gave a faradic response at the end of the first fortnight made a perfect recovery Should such patients be sent to the electrotherapeutic department or to the surgeon for decompression?

Sir **Harold Gillies** said his feelings to night were very much towards the medical side and he felt that the profession was still without the clear indication that Dr Critchley desired. Most mastoid operators would say that most of their cases of facial paralysis showed some recovery in a period ranging from three months to two years His electrotherapeutic colleague had said that a loss of faradic response at the end of ten days betokened severe injury to the nerve and he gave a guarded prognosis for he expected that recovery would not at all events be complete

REVIEWS AND NOTICES OF BOOKS

Clinical Use of Digitalis

By DREW LUTEN, A B , M D , Associate Professor of Clinical Medicine in the Washington University School of Medicine London Baillière, Tindall and Cox. 1936 Pp 226 16s

DIGITALIS is one of the most valuable drugs we have—the statement has remained unchallenged through innumerable editions of "Hale White"—but its value to the clinician is directly proportional *to his knowledge of its properties and the indications* for its use The embodiment in book form of the well known work of Dr Luten on the clinical use of digitalis is therefore an event to be welcomed. After considering the mode and sites of action of the drug on the myocardium, the author arrives at the conclusion that the chief and only important action of digitalis is to increase the efficiency of the contraction in the presence of heart failure This belief—that digitalis is to be used in the presence of heart failure, or impending failure, and then only—is the pivot of the whole book, and one against which few valid objections can be brought For twenty-five years it has been taught that digitalis has its most dramatic effect when used for heart failure associated with auricular fibrillation and a rapid ventricle, while this is probably correct, Dr Luten emphasises the secondary importance of the rhythm and the rate, the all important factor being failure In other words its effects are displayed irrespective of the rhythm and rate and its administration is rarely justified for these disorders alone Dr Luten believes that digitalis only reduces the ventricular rate in fibrillation when some failure is also present, and from this he concludes that if slowing does result it is largely a secondary effect of improved myocardial efficiency This view is supported by the observation that digitalis does not slow the heart-rate in fibrillation associated with toxæmias and infections in the absence of failure

The second half of the book is devoted to the indications for the use of digitalis in certain special situations, it is in effect *an amplification* of the guiding principle that digitalis is called for in cardiac insufficiency The complexities of dosage and administration are dealt with in full detail If the methods and principles here so clearly exposed were generally followed there would be some reduction in the number of patients who are treated with digitalis, and a fuller and safer effect in those to whom it is given Dr Luten's monograph can be recommended as a sound contribution to modern therapeutics

Comparative Anatomy

By HERBERT V NEAL Professor of Zoology, Tufts College, and HERBERT W RAND, Associate Professor of Zoology, Harvard University London H K Lewis and Co, Ltd. 1936 Pp 739 21s

THIS book is intended in particular for the medical student, so that the detailed information which T H Huxley regarded as appropriate to a text book on comparative anatomy gives way *to a more general* systematic treatment, in fact the work is morphological rather than anatomical. It is written in an interesting way and is well illustrated We cannot accept without protest the authors' assumption that the student is not interested in morphological problems, most students take an interest in such questions when the bearing on human structure and variation is made evident to them This book deserves a successful future, although the differences between the curriculum in the United States and in this country may perhaps affect its popularity here In any case it is a book which the more thoughtful student will enjoy

The Development of Modern Medicine

By RICHARD HARRISON SHRYOCK, Professor of History, Duke University, Philadelphia London Humphrey Milford, Oxford University Press 1936 Pp 442 18s

THE medical profession have certainly, to day, large opportunities for learning the history of their science, the part played by the path finders, and the personality of the pioneers American authors have been particularly industrious, and we now look to America for the best expositions of medical history Prof Shryock writes on a new and interesting pattern. He makes no attempt to study the technical history of medicine but portrays the more important aspects of medical development seen against a background of social history in general, as a contribution to which it makes extremely interesting reading The story commences with the seventeenth century and the usual chapters on the old Greek and Latin observers are omitted, probably to the relief of many We start with descriptions of the early work in the medical centres of France, Germany, England, and America, and throughout the intention is sustained to show the part which medicine, as it progressed, played in the reforms of changing society The author's thesis is that the happiness and progress of a people must bear definite relations to the status of medical science in the country and to the extent to which medical advance is employed for the public good.

Of the medical science of the eighteenth century the author, being fully read and documented before forming his opinion, has no complimentary picture to draw The physics of the day were not adaptable to therapeutics and medieval credulity and a slavish following of tradition were everywhere in evidence By the end of the eighteenth century the position was changed and a great improvement in scientific methods was manifested, but this did not mean the scrapping of all the old superstitions, for many familiar and popular conceptions were *found*, on closer examination, to be capable of development into valuable therapeutics An interesting chapter summarises the early contributions of medicine to the public welfare of the eighteenth century, while the first half of the nineteenth century witnessed developments which must sometimes have been impeded or obscured by the direction of thought throughout a romantic age But the relations between medicine, the basic social sciences, and mathematics began to show a convergence which led to fundamental changes. These are exemplified in sections which follow on the influence of modern medicine in France and Germany, but throughout the early part of the nineteenth century there was little scientific progress made for the promotion of public health. Prof. Shryock evidently regards as the chief British contribution to medicine at the period the development in public health movements The result, he says, was that the health programme entered a new phase after 1870, so impressive a phase that it was soon viewed as the very beginning of things in public hygiene with perhaps a tendency to exaggerate the value of medical research.

The book is largely written from the American standpoint and the last chapters, which describe American views upon national health insurance and record some pertinent statistics deserve close attention. There is as yet no general approval of national health insurance in the United States but the efforts of those who believe that legislation with some such object is necessary are recorded by Prof. Shryock with informing detail.

This is a good book.

Starling's Principles of Human Physiology

Seventh edition. By C. Lovatt Evans, D.Sc., F.R.C.P., F.R.S., LL.D., Jodrell Professor of Physiology in University College, London. The chapters on the central nervous system and sense organs revised by H. Hartridge, M.A., M.D., Sc.D., F.R.S., Professor of Physiology at St. Bartholomew's Medical College. London: J. and A. Churchill Ltd. 1936. Pp. 1096. 24*s*.

When E. H. Starling wrote the first edition of this book twenty-four years ago he cannot have foreseen the burden of knowledge it carries to-day. We use the word burden advisedly. Physiology was then being conquered by physical and chemical methods and although we cannot surmise what Starling thought he would have been justified in supposing that a quarter of a century would find the subject perhaps greatly extended but simpler to expound. As it is physical and chemical methods greatly refined have served but to reveal an infinite complexity easy to evade in an elementary treatise but very difficult to deal with in an authoritative work. English physiology owes a great debt to the present author of Starling's Physiology. In the midst of a flood of books on specialised branches of the subject, on its more advanced aspects and on physiology for medical students for nurses, and for the general public, he has not shirked the task of maintaining the standard and tradition of a book whose title might well be simply Physiology so well does it epitomise all we understand by that term.

The size of the book somewhat reduced in this edition may seem forbidding to the student but it contains all the biophysics and biochemistry he needs and has an exhaustive section from the pen of Prof. Hartridge on the special senses. The serious student will turn to this book because it deals in a satisfying manner with the strictly scientific aspects of the subject and yet gives a living account of the living body. Where it is difficult to formulate a conclusion the evidence is discussed, instead of the nearest or most probable approximation to the truth being baldly presented. This makes it more difficult to learn but easier to understand and of great educational value. The references to original papers in footnotes and to monographs and other books given at the end of each chapter are of inestimable worth and serve still further to enhance the vitality of the book. The vitamins the ductless glands and the humoral transmission of nerve impulses come in for special treatment in this edition, as was to be expected. The nervous system is perhaps the least satisfactory section more from the point of view of arrangement than from any sins of omission. The plan followed by Prof. Hartridge in presenting it is in a way logical but he should consider whether it is justifiable on practical grounds to start with the cerebral hemispheres and finish with the spinal cord. The elimination of the purely anatomical sections on the central nervous system is an improvement.

The new edition has been conscientiously revised throughout many old illustrations dropped and better ones introduced the publishers are to be congratulated on the excellence of their plates. The freer use of heavy type for subheadings is another commendable feature in its production. In spite of the increasing difficulty of the subject the book remains more firmly entrenched than ever in the position intended for it by Starling.

Bell's Sale of Food and Drugs

Ninth edition. By R. A. Robinson, of the Middle Temple, Chief Officer Public Control Department Middlesex County Council. London: Butterworth and Co. Ltd. 1937. Pp. 321. 15*s*.

This well-known legal text-book has long been popular with health officers because of its lucidity reasonable size and excellent indexes. The eighth edition was published after the Food and Drugs (Adulteration) Act of 1928 came into force and since then the sale of food and drugs has not altered much. But the Milk Act of 1934 and amended orders have materially changed the sale of milk and new orders under the Merchandise Marks Act of 1926 have affected the powers and duties of local authorities. The whole text has now been revised, although the body of the book remains the same in form. The sections on milk have however been rewritten and as it is for guidance in the confusing legislation of milk sale that Bell is most frequently consulted by medical officers the ninth edition is for them practically a new work. Some points in the law relating to milk are unfortunately still obscure and in the absence of rulings remain doubtful. Measures to be taken against adulteration were covered by the Act of 1875 and the orders based on it and were incorporated in the Act of 1928. They give the medical officer of health little trouble but the milk orders give him as much worry as any of his work and he is often in doubt about his duties. So an up-to-date edition of Bell is a comforting guide to have on his desk.

Practical Preparations Mainly Medical

By N. W. Powell, late Sister Hope, St. Bartholomew's Hospital. Second edition revised by P. Gill, late Sister Tutor the Royal Free Hospital. London: Faber and Faber Ltd. 1936. Pp. 212. 3*s*. 6*d*.

This pocket-size manual describes the nurse's part in preparing for and helping with the various diagnostic and therapeutic procedures and includes the technique of such things as simple urine testing and collecting vaccination and catheterisation which a nurse may be called upon to carry out. Where necessary enough explanation of the purpose and rationale of any particular procedure is given to enable the nurse to act intelligently. The technique of hypodermic injection was presumably regarded as too simple to warrant description yet whether this is done neatly or clumsily makes a real difference to the comfort of a sensitive patient and there is a note on how to perform the last offices still curiously enough regarded as part of a nurse's job though many may think that her time might be spent more profitably with the quick than with the dead Nevertheless this is a practical little book which should be of use to those engaged in both institutional and private nursing It includes a detailed but concise account of the special diets employed in certain diseases and there is an index

Les avortements mortels

By H Mondor, Professeur agrégé à la Faculté de Médecine de Paris, Chirurgien de l'Hôpital, Bichat Paris Masson et Cie 1936 Pp 445 Frs 65

The importance of abortion as a cause of maternal mortality is well recognised. This book is concerned with the fatal acute complications of abortion and discusses them fully from their ætiological, pathological, and clinical aspects An extensive bibliography adds to the value of the volume, though there are minor inaccuracies, and it is perhaps not fully representative of the literature The section on anaerobic organisms in relation to post abortion infections is particularly interesting The author is a strong supporter of radical measures in treatment Colpotomy and hysterectomy with or without drainage are advocated in peritonitis and septicæmia In the latter condition he places great reliance on confirmation of a positive blood culture and evidence of hæmolysis as guides to the necessity of operation

The book is pleasant to read, the more so as Prof Mondor constantly illustrates his views by clinical excerpts from his own case records

Methods of Tissue Culture in Vitro

By Ralph Buchsbaum, Ph.D, Department of Zoology, University of Chicago, and *Outlines of Histological Methods with Special Reference to Tissue Culture* by Clayton G Loosli, Ph D, Department of Anatomy, University of Chicago London Cambridge University Press 1936 Pp 81 4*s* 6*d*.

The first part of this book is intended to present a simplified method of tissue culture for a single investigator in an ordinary biological laboratory It begins with a statement of the general principles of tissue culture and proceeds to a full description of how to arrange and equip the laboratory and how to organise the routine work. Asepsis, the preparation of media, and finally the preparation of cultures are considered in great detail. A useful summary of the apparatus required for a tissue culture laboratory is appended The second part outlines methods for fixing, embedding, sectioning, and staining cultures and control tissues One important point of technique has perhaps hardly been sufficiently stressed. The reader is advised not to prepare plasma "less often than once every week or two," and tissue extract if possible once a week. To get the best results we have no doubt *that the plasma used* should not have been as much as a week in cold storage, and for many types of culture it is undesirable to keep tissue extract for longer than 24 hours

The book, which is written in a clear and logical manner, is by no means a complete account of tissue culture methods, several important techniques being omitted. Its special value lies in the fact that both the tissue culture and histological methods described are mainly those used in the laboratory founded by the late A. A Maximow, now directed by Prof. W Bloom, and for this reason the book will be welcome in all tissue culture laboratories.

Quarterly Journal of Medicine

The January number (Vol 6, No 21) contains the following papers

A Study of the Choline Esterase Activity in Nervous and Mental Disorders By Henry Tod and M S Jones (Royal Edinburgh Hospital) Values obtained by the authors' method in 203 patients and 30 controls are summarised The esterase activity in the serum is high in anxiety states, low in catatonic stupor and epilepsy, and not abnormal in hysteria, melancholia, mania, paranoia and paraphrenia, and thyrotoxic states

The Fate of Large Doses of Iron Administered by Mouth By John Fleming Brock and Donald Hunter (British Postgraduate Medical School and London Hospital) Accurate balance experiments show that in normal subjects approximately 10 per cent of the iron given by mouth as Blaud's pill (90 grains daily) or iron and ammonium citrate (80–120 grains daily) is retained in the body In patients with hypochromic "iron deficiency" anæmia the retention varies from 11 to 32 per cent, and sometimes far exceeds the iron equivalent of the increase of hæmoglobin in the blood

Acromegaly and Creatine Creatinine Metabolism. By I Schrire (National Hospital for Nervous Diseases, London) In nine cases of acromegaly the urinary output of both creatine and creatinine is shown to be abnormally great and abnormally variable from day to day Injection of thyreotropic hormone in normal subjects increases creatine output (as do thyroid and thyroxin) Injection of "antuitrin" (Parke, Davis's anterior pituitary extract, without thyreotropic activity) in normal subjects increases creatinine output Probably, therefore, an eosinophil adenoma secretes an excess of thyreotropic hormone, affecting creatine, and of another hormone affecting creatinine

Observations on Agranulocytosis By M C G Israëls and John F Wilkinson (Manchester) Five cases of agranulocytosis and one of chronic neutropenia are described Two of the former were attributable to amidopyrin, and amidopyrin sensitivity was demonstrated in one of them Bone marrow examined post mortem contained very few granular leucocytes, myelocytes, or pro myelocytes Pentnucleotide was given to five patients, but in only one could it be credited with a possible beneficial effect

The Prognosis following Recovery from Coronary Thrombosis, with Special Reference to the Influence of Hypertension and Cardiac Enlargement By J H Palmer (London Hospital) An elaborate analysis of the records of 212 patients who have survived coronary thrombosis by more than three months More than a fourth are able to lead fairly active lives The rest lead restricted lives, on account of angina of effort, dyspnœa on exertion, or congestive failure, or they have died The presence or absence of hypertension gives no indication of a patient's expected duration of life, his liability to further coronary attacks, or his prospect of being fairly active On the other hand, patients with normal sized hearts are somewhat more likely than those with enlarged hearts to live longer, to remain active, and to escape subsequent coronary attacks, they suffer from angina to the same average degree as the others, but they do not develop congestive failure

The Heart in Emphysema By John Parkinson and Clifford Hoyle (London Hospital) A clinical study of 80 patients Emphysema causes enlargement of the pulmonary arteries, the conus of the right ventricle, the right ventricle, and the right auricle, in that order of progression and therefore of frequency Radiological evidence of these changes is found in about half of the cases Emphysema alone rarely causes congestive failure, but failure so caused is severe and usually fatal Emphysema is often associated with systemic hypertension or other conditions affecting the heart these are responsible for left ventricle enlargement, which is often found, and for most cases of congestive failure

The Magnesium Content of the Serum in Renal Insufficiency By Ronald W Brookfield (Liverpool) It is raised, up to twice the normal value, in acute and chronic glomerulo nephritis and other conditions causing renal insufficiency and nitrogen retention Calcium content tends to vary inversely Magnesium sulphate, *in normal doses by mouth raises the serum magnesium level* comparatively little even in patients with renal insufficiency

THE LANCET

LONDON SATURDAY FEBRUARY 13, 1937

THE LIMITATIONS OF HEARING AIDS

SINCE the invention of the telephone which it may be recalled was devised by BELL originally as a hearing-aid for the deaf scientific study of the reproduction and amplification of sound has become more and more important commercially and has in consequence made rapid progress Hearing-aids too have been greatly improved during recent years but further improvement is still possible and the report of investigations made by Dr and Mrs EWING and Dr LITTLER which was summarised in our columns last week, contains many conclusions of interest in this respect An important section deals with auditory fatigue This is observed with normal subjects as the result of stimulation by pure tones maintained at large intensities for two or more minutes but deaf subjects appear to be less susceptible auditory fatigue is not however experienced after listening to loudly amplified speech because the duration of the loudest components of this is never greater than half a second Daily use of a powerful hearing aid over a prolonged period has not been followed by any change in auditory acuity This disposes of the objection often raised by patients who dread that the use of a hearing aid may damage the remains of their hearing Experiments were made on the intensity level at which speech was *most clearly intelligible* for listeners with unimpaired hearing syllables were recognised with an accuracy of 70 per cent at a loudness of only 30 decibels above the normal threshold of audibility the equivalent of a whisper at 15 inches from the ear but with an accuracy approaching 100 per cent when its loudness was raised to 70 decibels above the threshold corresponding to an *ff* voice at 8 feet an increase of intensity to 110 decibels caused a slight loss of intelligibility Although a high degree of intelligibility can sometimes be obtained with deaf subjects this is not always possible even with the best available microphone and amplifier system 100 per cent. intelligibility cannot be obtained with any deaf subject using the simple non valve types of electrical aids This failure is probably due to the relatively low intensity of the consonant components of speech which may not reach above the subject s threshold of hearing all deaf people seem to find it easier to distinguish vowels than consonants With the most severely deaf patients an intensity level of 110 decibels was necessary and even then 100 per cent accuracy could not be obtained higher levels could not be used owing to the disagreeable sensations produced when the threshold of feeling was approached (An intensity level of 110 decibels is that of an aeroplane engine quite close to the listener s ear) This threshold of feeling places a limit on the degree of amplification permissible especially for nerve-deaf patients in whom it appears to be unduly low such a patient may have a maximum intelligibility at 90 decibels but be unable to bear a loudness above 100 decibels If his hearing aid is adjusted to give maximum efficiency for quiet speech it will be detrimental when used for listening to sounds only 10 decibels louder The authors do not mention an automatic volume control which was introduced to meet this difficulty and noticed in our columns last year[1]

The most satisfactory results with every subject were obtained by that hearing aid which has the nearest approach to uniform amplification over the frequency range of *from 200 to 8000 double vibrations to obtain* which valve amplification is at present indispensable Another important if depressing conclusion is drawn from these studies that until amplification of a higher order than has as yet been achieved can be secured over the whole speech range, tests of the possibility of matching an aid to a hearing loss curve are not feasible and claims that this matching can be done with small aids are premature The authors find also, that portable non valve battery aids are seriously handicapped by their uneven frequency response and by their low amplification factor their efficiency is greatly affected by changes in the distance between speaker and microphone, and sound reproduction is lacking in natural quality Bone-conduction receivers are found to have a range of intensity considerably less than that of an efficient air-conduction receiver and to be an uneconomical means of using the output of an amplifier It seems to us that the authors somewhat underestimate the practical value of these small aids to the numerous class of moderately deaf people Their experience has largely been among very deaf children and of the eight other patients on whom tests were made the least afflicted was so deaf that *mf* conversation was to him 10 decibels quieter than a whisper would be to a normal listener

The conclusion reached is that the conditions under which hearing aids are supplied to the public should include tests of the patient s response to pure tones by the audiometer and a standardised articulation test with the instrument which it is proposed to supply for a period of trial The tests of audibility of speech were made in this investigation on an apparatus assembled inside a soundproof room with a meter to indicate the output level and to assist the speaker to maintain a constant loudness which was then controlled by an attenuator Tests of this nature cannot in practice be demanded of commercial firms who supply hearing aids and it is therefore fortunate that in the present study the results obtained by testing patients for a series of pure tones by means of the audiometer provided a reliable index of the intelligibility of speech to the deaf listener It is important to remember that the intelligibility of speech heard through the best hearing aid is seriously diminished if the acoustic properties of the room are poor, if the speaker talks with a non-resonant voice, and if extraneous noises or general conversation complicates the sound intended to be heard

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[1] *Lancet* 1936 1 1163

On the outstanding work standing to the credit of Dr and Mrs EWING and their collaborators on the use of hearing aids in the education of deaf children we have already commented[2] In their experience the class amplifier has many advantages over individual aids Four special classes have received daily systematic teaching by combined hearing and lip reading since September, 1935, the rate of progress obtained in speech and general school work, compared with the previous results of older methods, is even more satisfactory than was expected Reproduction of the highest quality is even more important to the severely deaf child who is dumb or retarded in speech than to the adult Examination of the hearing of backward children is of great moment, for, of 27 children from schools for the mentally retarded, only 3 were found to be mentally affected, 24 being deaf and therefore unable to understand ordinary class instruction

MENTAL DISEASE IN LONDON

THE mental health services of the London County Council are so extensive—they are concerned with approximately twice as many patients as are those of the whole of Scotland—that an annual report[3] can give only a summary of changes, statistics, and research Among the changes last year was increased provision of beds, so that there were 155 more in the ten large mental hospitals, giving them accommodation for 21,472 patients, actually they can hold even more than this A substantial increase also occurred in the proportion of voluntary patients, this was much more evident in some mental hospitals than in others In the various districts of London the permissive "voluntary" clauses of the Mental Treatment Act were for some reason more used south of the Thames, where about a quarter of those referred to a mental hospital were thus enabled to escape certification Such a discrepancy between particular areas may be due in part to the authorities in observation wards having widely different views of their responsibility and powers in regard to voluntary treatment, another factor is, no doubt, the willingness of patients to go to a particular mental hospital which usually receives people from their district It would be an advantage if those hospitals which —mainly for historical or architectural reasons— are unpopular with the public could come to have as large a number as possible of their patients transferred to the voluntary class, it would help to mitigate prejudice and lead to a very desirable increase in direct voluntary admissions to those hospitals The detailed tables now published (Tables 13, 14, 15, 16, and 23) make the importance of the matter clear

A valuable addition to the report is the classification according to diagnosis and the tabulated survey of "causes and associated factors of mental disorder" among the direct admissions during the year The scheme adopted is the official one required by the Board of Control This is unfortunate since the diagnostic schedule is in some respects obsolete the revised classification of the Royal Medico Psychological Association (1932) would be much more useful, and would permit comparison with the statistics of other countries The ætiological table is informative Naturally it reflects prevailing theories, sexual excess, for example, is now passed over as a cause of insanity, and heredity is held to be much less often responsible than critical periods of life or prolonged mental stress in a third of the admissions the psychiatrist could not discern any principal cause of the disorder

The provision of vocational training for patients living in the community is not now restricted, as formerly, to defectives, a prophylactic experiment has been begun, aiming at the rehabilitation of patients recovering from a mental illness to which their maladjustment in industry had contributed The occupations of the defectives on leave of absence from institutions, or under statutory control, is again shown to spread over a wide field, with factory work as the commonest choice, it is pleasant to see that the "midget in midget troupe" is still holding her audiences, though the "artist" and the "pasteuriser (wine)" who figured in the previous year's report have now faded from view The scientific investigation of deficiency has not been neglected in the Council's hospitals, as may be seen in the survey at the end of the report On research throughout the mental hospitals the report gives interesting data, and also on the work of the Maudsley Hospital, with its out patient ramifications, and on the financial aspect of the mental health service

MEDICAL PRIVILEGE

SIR ERNEST GRAHAM-LITTLE, M P, was denied the second reading of his Medical Practitioners' Communications Bill last week, the House of Commons negativing it without a division It proposed to establish that any information obtained by the practitioner in the course of treating a patient should be regarded as confidential and should be privileged from disclosure in a court of law There are several hackneyed methods of damning a private member's Bill The first, of course, is to censure the drafting—a line which can usually be safely taken against Government Bills as well. The second is to abuse the Bill for not going far enough, the third to abuse it for going too far The third method was the most popular last Friday All the critics of the Bill declared that they would have been quite sympathetic towards it if only its scope had been restricted to non-disclosure in cases of venereal disease A

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[2] *Lancet*, 1936 i 1020

[3] Annual Report of the L C C 1935 Vol VI Mental Hospitals and Mental Deficiency No 3234 London P S King and Son Ltd

Bill with this limited objective was as it happens introduced by Sir E Graham Little in 1927 Had it then been welcomed with the enthusiasm which Members of Parliament now show for its proposals retrospectively perhaps it might have been passed into law Its fault possibly was that it did not go far enough But it is disappointing to find that the legislative genius of Westminster cannot hammer a Bill however clumsy the original shape into serviceable form The Solicitor General was singularly pessimistic last week Sir E Graham Little's Bill was hopeless nothing could be done to improve it it must die

Meanwhile the medical practitioner is left in doubt and difficulty Last summer a doctor was judicially scolded for disclosing the disease for which a patient had consulted him It was a civil case at Leeds assizes The patient was dead His widow was suing the doctor to recover a sum of money said to have been lent by her late husband Mr Justice CHARLES was horrified at the breach of privilege What do you mean he demanded by revealing what ought to be a matter of the most sacred confidence between you and your patient? Usually the judicial bombardment thunders from the other flank How dare a doctor claim privilege for professional secrets when summoned to give evidence in a court of law? The dilemma as Sir E Graham Little reminded the House of Commons last week has been particularly unfortunate in the treatment of venereal disease The Royal Commission of 1916 was satisfied that this racial scourge could be reduced within narrow limits by early and efficient treatment it recommended free clinical facilities for the whole community and it insisted upon the importance of secrecy if patients were to show the necessary trust in consultation and treatment under the scheme Official regulations made under statutory authority and having the force of law were subsequently issued They enacted that all information obtained in regard to patients treated under the scheme must be treated as confidential, it being essential that patients should be fully assured of the secrecy of the arrangements That was clear enough The medical practitioner who has his own immemorial code of professional reticence in these matters understood that it was a legal as well as a moral duty In two High Court cases, however the doctor was subsequently told that the secrecy enjoined by the Venereal Disease Regulations did not mean what he innocently supposed in fact if he persisted in obeying the regulations he might find himself in peril It was after the second of these cases that Sir E Graham Little introduced his original Bill in 1927

The Ministry of Health might have been conscious of some responsibility for the deadlock due to its regulations but it made no sign. If the claims of justice had to be weighed against the claims of public health the Ministry refrained from intervention. Early in 1928 the learned judge who is now Lord ATKIN in some extra judicial comment on the 1927 Bill said he thought that in some cases notably those connected with venereal disease the claims of public health far outweighed the claims of justice If this be true some Parliamentary re statement of the law is long overdue If disclosure is never insisted upon where the fiduciary relationship of solicitors and their clients is concerned why must it always be insisted upon in the case of doctors and their patients? Would Parliament accept as an initial step a measure to recognise medical privilege in civil but not in criminal proceedings? The result would not be what doctors and patients understand by professional secrecy but it might meet some of the criticism which complains that medical privilege may shelter murderers and abortionists If no such compromise be acceptable we hope that Sir E Graham Little will bring in his original Bill again. If the sympathy expressed last week be genuine the third time he may be lucky

PEMPHIGUS NEONATORUM

IT has long been known that pemphigus neonatorum and pemphigus vulgaris have nothing in common but the vesicles or bullæ and the fact that either may be fatal. The former—which ought to receive some different name such as bullous impetigo of the new born[1]—is a highly contagious disease of infants that from time to time causes outbreaks in maternity or nursing homes, and is always (so far as we know) due to the *Staphylococcus pyogenes aureus* whereas true pemphigus is almost unknown in infancy is sporadic in incidence and of unknown ætiology In this country most outbreaks of pemphigus neonatorum run a relatively benign course but every now and again there are fatalities that no skill or foresight seem able to prevent. Poole and Whittle[1] found reason to think that particular forms of treatment do not affect the issue one way or the other and the list of therapeutic measures given by Normark[2] is suspiciously long including the permanganate bath (probably still the best both in treatment and prophylaxis) various mild dusting powders and weak solutions of silver salts dyes such as flavine brilliant green and methyl violet and sulphur precipitate or even mercury in ointment or calamine lotion. It is quite true as Normark says that despite any of these applications a denuded surface may extend centrifugally and when this happens the outlook becomes black. It is of paramount importance therefore when such a tendency is observed to limit and confine the spread of the infection to its primary locality and this he claims can usually be done by occlusion with Elastoplast whose use has already been advocated by Newman[3] in a very similar disease—impetigo contagiosa Adopting a procedure like Newman's and occluding the newly infected area or areas for a week at a time there were no undesirable sequel and the period of treatment is said to have been reduced from 16 days to 9 The number of cases (11 with 12 controls) was admittedly small but further trial would certainly be justified.

THE Hunterian oration of the Hunterian Society is to be given by Lord Horder at the Mansion House London on Feb 22nd at 9 P M His subject is the Hunterian tradition

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[1] Poole W H and Whittle C H (1935) Lancet, 1 1333 1333

[2] Normark K A (1936) Upsala Läk Fören Förh 42 219

[3] Newman, J L (1933) Brit med J 1 933

ANNOTATIONS

A DISPOSITION TO CANCER

In a very interesting paper entitled Cancer and the Expectation of Life, which he read last week to the Assurance Medical Society, Dr W Cramer, of the Imperial Cancer Research Fund, pointed out that to the experimental pathologist the fundamental problem is why does this or that person develop cancer. From the point of view of life assurance the approach is quite different, for here the main question is how far does cancer affect the average duration of life, and what factors ought to be considered in assessing the risk of death from cancer in an individual applicant for insurance. The answer must clearly depend upon statistical analyses of the available data. There are three main issues, he suggested, for consideration—namely, the increase in the recorded mortality rate, the possibility of hereditary factors being present, and the possibility of causative extraneous factors other than the recognised but at present numerically insignificant carcinogenic agents discovered in a few occupations. Each of these three issues Dr Cramer discussed in turn. The first, in company with most other students of the statistics, he dismissed as unimportant. The considerable increase in the crude cancer death rate is largely due to the increasing age of the population of the country, while the rise at later ages is likely to be due to a greater accuracy in diagnosis and in the certification of cause of death. On the second, inheritance, he began by concluding that the incidence of cancer is governed by two factors, the presence of carcinogenic stimuli and the susceptibility of the terrain on which these stimuli act. Certain tissues and organs—the skin, the uterine cervix, the buccal cavity, the œsophagus, and the stomach—he regards as particularly exposed to possible carcinogenic injuries coming from without, and therefore in this group one would expect the incidence to be determined mainly by the extrinsic factor of the stimulus and less by the intrinsic factor of susceptibility. The mamma, the body of the uterus, the lower digestive tract, and the glandular tissues, on the other hand, are less exposed to stimuli from outside, and in these susceptibility is likely to predominate. After some reference to the evidence of heritable factors in mice, Dr Cramer quoted in support of these general propositions with regard to man the evidence collected by Waaler[1] in Norway and by Wassink[2] in Holland, and summed up by saying that there is conclusive evidence of a familial incidence of cancer, which is most distinct in such an organ as the mamma and least in such an organ as the lip. This leads, he said, to the "uncomfortable suspicion" that the increase in breast cancer in this country may be due to an increase in the number of people with an inherited susceptibility. To this, however, it might be answered that we have no clear evidence of such a change in susceptibility, whereas we have definite evidence of a change in a possible external stimulus, for we know that the birth rate is falling and that breast feeding is less practised than of old. The fact that the mortality rate of single women from cancer of the breast is consistently higher than that of married women also suggests the importance of an extrinsic factor. Such a difference does not, of course, invalidate the evidence for inheritance, but it does make it doubtful whether it can be regarded as of paramount importance. If it were, why should civil state affect its incidence?

Turning to extraneous factors Dr Cramer quoted the social differences revealed by Stevenson in his analysis of the national statistics of 1921–23 and some figures from Bavaria. Despite the interest and importance of the subject he can find no other European countries in which such statistical investigation has been made. The importance of the relationship lies in the fact that "it establishes for certain sites an ætiological connexion between the social status and the remote causes of cancer exactly comparable to that of occupational cancer." The explanation of the rising rates of mortality from cancer of the exposed sites as one passes down the social scale must be sought for in the habits and conditions of life of the lower social classes. The attack upon the problem must come, Dr Cramer suggested, from the collaboration of the experimental cancer researcher, the statistician, and the clinician. His own work should do much to encourage each of the triumvirate.

LIPSTICK CHEILITIS

La cheilite du rouge, as it is termed in France, was first recognised as a specific entity by R Sabouraud (Dermatologie Topographique) in 1905, but aroused little interest until after the war when the use of lipstick became more general. To day it is almost universal, and cases of intolerance to (1) the dye or pigment, (2) the perfume, and (3) the excipient or ointment base, are bound to occur from time to time. The laws of sensitisation apply here with added force, for the applications once begun are likely to be renewed, as can be commonly observed, throughout the day and part of the night, year in and year out. It follows, according to Bloch's researches, that if an irritant is contained in the cosmetic, "acquired" sensitivity is bound to develop sooner or later. The eczematous manifestations which include itching and burning, varying degrees of œdema, and even vesiculation in severe cases, need not be limited to the labial mucous membrane, but may involve the tip of the tongue and the labial commissures, and may spread thence to the chin and submental region in the form of erythematous or scaly or vesicular patches, according to the individual susceptibility. These symptoms may develop after the first or second application, or they may not occur for years, and in that event usually fail to arouse the patient's suspicions. A Sézary and A Horowitz have collected 11 proven cases of lipstick cheilitis in their practice.[1]

After considering the differential diagnosis from streptococcal and other forms of cheilitis (e g, from the use of toothpastes) the authors set out the constituents utilised in the manufacture of modern lip rouge. The commonest appears to be eosin, which yields a greenish fluorescence in aqueous solution. Rhodamine tolu safranine, and carmine are among the other pigments recovered on chemical analysis in the series examined. It is clearly important to determine if possible to which constituent—dye, perfume, or base—the cheilitis in any given case is due, as the patient when cured of her symptoms is certain to demand an innocuous formula for future use. Cutaneous patch testing will mostly serve to incriminate the constituent, this method of testing, here described in detail will certainly be found useful in practice. Full notes are included on the treatment which must be adapted to the type and stage of the reaction.

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[1] Waaler H M (1931) Ueber die Erblichkeit des Krebses Oslo

[2] Wassink, W F (1935) *Genetica* 17 103

[1] *Pr Méd.* Jan 27th, 1937

ARTIFICIAL PNEUMOTHORAX ON STATISTICAL TRIAL

THE February number of *Tubercle* contains as a supplement a report by the Joint Tuberculosis Council on the results of artificial pneumothorax treatment In the preparation of this report 200 institutions were circularised and 42 eventually collaborated No fewer than 3021 cases of pulmonary tuberculosis treated by pneumothorax have been followed to the end of 1932 The difficulty has been to provide adequate controls The first control group comprised 1320 cases from the same institutions in which pneumothorax either had failed altogether or had been abandoned within three months. But it is arguable to say the least that this A.P failed group is likely to show poor results for even if the presence of pleural adhesions does not aggravate the prognosis psychological reasons for discontinuing the treatment will almost certainly do so Foreseeing this objection the committee appointed by the Joint Tuberculosis Council decided to be as self critical as possible, and with actuarial assistance from Mr G D Stockman proceeded to compare their pneumothorax results with those obtained in 2750 cases treated at Midhurst Sanatorium between 1911 and 1929 only about 1 per cent of which had pneumothorax treatment Unfortunately these cases had been classified on a different system and there were two other factors that made the prognosis in the Midhurst cases better than that of most other institutions—first that the middle-class patients from whom this sanatorium is supplied have better facilities for after care than the mainly working-class patients on whom the present inquiry is based and secondly that they had already undergone selection the sanatorium having been endowed for the treatment of early and curable cases Had the artificial pneumothorax cases shown a definite advantage, group by group over the Midhurst figures a clear statistical case would have been made out for this form of therapy ; but as it is Mr Stockman finds that the results are inconclusive

Few if any clinicians with much experience of pneumothorax treatment doubt its value in suitable cases, and it is impossible to avoid a feeling of disappointment that four years painstaking and comprehensive work should have failed to establish a statistical basis for this conviction

THE NERVOUS HEART

MORE attention is at last being paid to the very common symptoms misinterpreted by patients—and occasionally by their doctors—as due to heart disease In our own columns Dr Doris Baker[1] has examined them from the cardiological standpoint and in a paper by Yaskin[2] we now have the observations of a psychiatrist His two main conclusions are first that cardiac manifestations are found in all forms of neurosis being often the predominant symptom and secondly—which is more questionable—that true cardiovascular disease is very often associated with neuropsychiatric disorders His first conclusion he points out is not surprising when it is recalled that anxiety is the central symptom of nearly all neuroses and psychoneuroses and that the heart has a rich sympathetic and parasympathetic innervation that causes it to respond to states of fear Moreover the secretion of adrenaline under emotional stress will also affect the heart by accelerating its beat Investigating 100 cases Yaskin found that palpitation was the outstanding symptom in anxiety neurosis and usually yielded to treatment. In conversion hysteria cardiac complaints were uncommon they mostly consisted in vague precordial pains and a statement by the patient, who showed no anxiety that he had heart disease or heart weakness In anxiety hysteria on the other hand cardiac complaints were fairly constant and severe, mainly taking the form of attacks of tachycardia and precordial discomfort ; indeed three of Yaskin's patients had actually had subtotal thyroidectomy with no relief of symptoms Here the most important therapeutic agent was held to be partial analysis but sedative and tonic medication played a considerable part In patients with compulsive-obsessive reactions palpitation and a feeling of impending death were the symptoms aroused by the patient's attempts to disobey his thoughts or impulses ; and in these cases again no treatment was of real value except partial analysis The 3 patients regarded as having true neurasthenia gave palpitation precordial discomfort, and heart consciousness as their main symptoms

THE FEEDING OF THE NATION'S CHILDREN

THE New Fabian Research Bureau has issued a booklet[1] setting out in some detail a scheme for improving nutrition in this country The author Mrs Barbara Drake first cites various reports and opinions about the prevalence of malnutrition and then draws attention to the fact revealed in nearly every survey of diets that large families come off worst. Sir John Orr has estimated she reminds us that 20–25 per cent. of the children of this country are among the poorest 10 per cent of the population and receive diets that are deficient in all respects After explaining the working of the present statutory arrangements for supplementing the diets of mothers and children she points out the advantages of collective feeding and builds up her plan. The present provisions she says, are inadequate because they do not go far enough and are only used patchily for instance in some districts cheap and free milk is allowed only to those pre school children who are under a year old, in others it is given to those up to five in others again it is not given at all. The selection of school-children for free meals is sometimes made on the recommendation of the school doctor and sometimes on an income basis and at present there is some lack of agreement between the Board of Education and the Association of Local Education Committees on the need to wait for evidence of malnutrition before free meals can be ordered. The arrangements under the Milk Act are considered inadequate for the reason that thousands of children belonging to large families cannot afford to pay even 2½d a week

The advantages of mass method of catering are obvious they permit of expert planning and buying cheaper meals and regular markets and remove the responsibility from the unskilled housewife In view of these facts Mrs Drake recommends that the organisation of an adequate milk supply for mothers and infants should be made compulsory for public health authorities ; that the milk in schools scheme should similarly be made compulsory and extended to all types of grant aided schools, and that in these schools, too, the education authorities should have to establish canteens and to provide a hot midday meal. It is suggested that the cost of these schemes should be taken on in three stages: in the first stage the cost would be limited in extent and some charge be made to the families, in the second there would be lower charges and wider application, and in the third the parents' payments would be abolished. The cost of the three stages is estimated, respectively, at some 23, 44, and 65 million pounds and would be met by the Exchequer and local authorities. These plans are one way of meeting a need which undoubtedly exists even if its extent has not been gauged. They are put forward with practical knowledge of the problem, and they would safeguard the nourishment of the coming generations in a more effective way than grants in money or in kind could ever do. Moreover, they are designed to help adult nutrition by relieving parents of some expenses. One cannot help wishing however that the argument had not made use of two questionable implications. The first is that the occurrence of some physical or mental defect or impairment of health in 27 per cent of 3000 "unselected" children was attributable to malnutrition. The second is that the expenditure of 60 million pounds would be neutralised by saving on the expenses of sickness. It will be seen from our Parliamentary Intelligence that some of Mrs Drake's arguments were used in the House of Commons on Feb 3rd but failed to produce a majority in favour of a change in policy. One cannot help noticing, however, that in each successive debate the Government defend themselves by explaining that the provision of milk and meals has now in fact been increased.

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[1] Baker D Lancet 193 1 1390 1934 1 174, 1936 2 787

[2] Yaskin, J C (1936) Amer Heart J 12 536

[1] Nutrition : a Policy of National Health By Barbara Drake L.C.C. with an Introduction by Eleanor Rathbone M.P. Pamphlet No. 31 of the New Fabian Research Bureau 37, Great James-street London W.C.1. Published by the N.F.R.B. by Victor Gollancz Ltd London 1937 Pp 36 6d

Some of us, who do not question the need to see that children are better fed, may perhaps be allowed to wonder whether the collective feeding of most of our children for the main meal of the day throughout the whole year will kill the kitchen sense still remaining. Will not communal feeding, for better or for worse, be required for those children when they grow up? Is the time come to despair of educational methods and of the adjustment of purchasing power?

THE WORLD CONSUMPTION OF NARCOTIC DRUGS

In a Statement of 61 pages issued by the Supervisory Body under the Convention of 1931 for limiting the manufacture of dangerous drugs, information additional to that reported in our issue of Jan 9th is furnished. From this it appears that since 1934 the amount required for world consumption, as such, of heroin has much declined, that for cocaine and codeine has shown some reduction, while that for morphine has during the last three years increased. Under the Convention each Government is required to furnish with its estimates a "statement explaining the method by which the several amounts included in the estimates have been arrived at." Nevertheless every year many estimates are received in which the description of the methods adopted is lacking; this occasions difficulty and delay and reference back for further information. In an annexe to the statement there is set out a comparative table showing for certain countries the estimated consumption of morphine, heroin, codeine, and dionin per million inhabitants for the years 1934 to 1937. In the case of morphine in 1937 Poland stands lowest with 1·5 kg, Denmark highest in Europe with 29·6 kg, while Great Britain is credited with 16·1 kg. For the United States the figure is given as 17·5 kg and for Canada 11·7 kg, while that for Japan is 21·9 kg. Somewhat similar remarkable variations in consumption are recorded in the case of the other alkaloids.

FITNESS

Most general practitioners recognise the wisdom of allowing a patient to prescribe within limits his own treatment. The Government, acting as physician to a none too healthy nation, has followed this same course in its proposals for the promotion of physical training and recreation. From the patient's point of view the assurance that there is to be no nasty medicine in the form of compulsory drill will allay some apprehension. The reasons for avoiding compulsion, given in the White Paper[1] setting out the Government's proposals, are first that any such thing would be against the national character and also that—

> "The aim of the Government is not to secure that between certain ages every boy and girl practises a certain physical exercise or achieves a certain standard of physical development, but to inculcate a wider realisation that physical fitness has a vital part to play in promoting *a healthy mind and human happiness. It is a way of* life and an attitude of mind the importance of which *is continuous and not limited to certain years in early youth.*"

The proposals are that funds and two central advisory councils (one for England and Wales, the other for Scotland) should back up and extend the organisations existing at present and that a National College of Physical Training should be established by the Government. The job of the advisory councils will be to advise on what is needed and how it can best be achieved. They will also have to promote the establishment of local committees and suggest means of publicity and propaganda. They will each consist of about thirty men and women. In addition the Government propose to appoint two grants committees, each consisting of three people, to consider applications for grants, and make grants if approved by the responsible minister, the President of the Board of Education or the Secretary of State for Scotland. The local committees will have the responsible jobs of making public interest active and of expressing views on the relative importance of the various proposals; they will have to say to what extent the cost of any scheme could be met from local sources and they will be the bodies to confront with suggestions. They will each have a paid secretary.

The primary purpose of the National College of Physical Training will be to fill in the gaps that are at present most conspicuous. First and foremost it is to train leaders to organise and undertake recreational physical training. It will also be used to help supply elementary school teachers trained in the use of apparatus, and teachers for boys' secondary schools where needed, although the training of school teachers is not ranked among the main purposes. The College will also provide the opportunity for research into the physiology of physical *training.* Women are not excluded from the College but it is recognised that for them in England, and for both sexes in Scotland, suitable colleges are already in being.

About £2,000,000 will probably be needed for the first three years of the programme and about £150,000 a year after that. It is to be spent partly of course on the new college and on new gymnasiums, playing fields, swimming baths and other means of healthy physical recreation. It will not be handed over to central voluntary organisations for distribution, but grants will be given to them mostly for some express project or to help them to assist local voluntary bodies. In particular grants are to be made to the Central Council of Recreative Physical Training so that it may give expert advice on forms of physical recreation and provide for the training of teachers and leaders while the new college is being established. This central council which is composed itself of all national organisations (over 100 in all) concerned in any form of physical recreation, only came into being about eighteen months ago. Already its activities are widespread and, judging by its third News Leaflet, it is engaged in encouraging just those activities that the Government wish to stimulate. It can be no mere coincidence that the Council was formed so opportunely, for it is proving an essential link between the Government organisation and the host of voluntary and other bodies with whom the Government plans to coöperate. Boxing, camping, cycling, dancing, games, athletics and swimming are all within its province, offering assurance that the Government plans to interpret physical recreation in a wide sense. Even these enjoyable employments cannot replace the delights of leisure in the country; moreover, as the *Manchester Guardian* puts it, lack of sun, bad atmosphere, small and insanitary houses, and above all too little of the right food and not enough of any, will no more be cured by exercise than lunacy was cured by a strait-jacket. But regarding the Government's proposals as a palliative rather than a panacea we must nevertheless accept them gratefully.

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[1] Physical Training and Recreation. Cmd 5364. London: H.M. Stationery Office. 1937. Pp 12. 2d.

LONDON VOLUNTARY HOSPITALS: A STATISTICAL REVIEW[1]

In 1921 the London voluntary hospitals had a complement of 13 300 beds; in 1935 they had 18 020 which were, moreover, used to greater advantage, for not only has the average number of *occupied* beds risen during the same period from 11 070 to 15 110 but the average stay of each in-patient has been shortened by three days. The number of new in-patients admitted was 172,200 in 1921 and 274 100 in 1935. Less satisfactory from some points of view is the increase of the annual number of out-patients from 1 545 000 to 1 872 000 and of out-patient attendances from 6 661 000 to 9 777 000. These figures, showing over three million more attendances in 1935 than in 1921, demand careful consideration in view of the suspicion, often expressed but difficult to prove, that the hospitals are here encroaching upon the domain of private practice. An ingenious if not entirely reassuring explanation of the increased attendances is offered by King Edward's Hospital Fund in this statistical survey, when it is pointed out that the average number of attendances per out-patient was 4 3 in 1921, 5 in 1930 and 5 2 in 1935. The suggestion is that the large number of attendances is associated with the modern conception of the proper function of an out-patient department—i.e., its development on consultative lines and the provision of facilities for specialised long-term treatments; while patients with trivial complaints, that do not require hospital treatment or for which other more suitable agencies are available, are discouraged. Support is found for this theory in the fact that the annual number of *new* out-patients, which increased by 342 000 during the period under review, is now approaching a fairly constant figure, the increase having been only 67 000 in the last five years of the period.

On the financial side the total receipts, including donations of capital and endowments, have risen from £3 440 000 to £5 100 000. It is of interest that in 1921 the percentage of the total receipts made up of voluntary gifts was 59 0 and in 1935 only 53 9, while the percentage of receipts for services rendered was respectively 25 8 and 33 2. Under this last heading are included receipts from contributory schemes, notably the Hospital Saving Association, from local authorities and from patients direct, including pay-bed patients. The rest of the total receipts are derived from investments, in proportion (13 to 14 per cent.) of the total not materially changed since 1921.

The annual *maintenance* income has risen from £2 751 000 in 1921 to what is described as the "imposing figure" of nearly £4,200 000 in 1935. This income has been sufficient to provide an aggregate credit balance in all but 2 of the 15 years for ordinary running expenses, though special help from the public is needed and will continue to be needed for any rebuilding, extension, or major improvements. Attention is drawn to the astonishing growth of voluntary payments by patients; this is a most encouraging feature in so far as it reflects public confidence in the voluntary hospitals and is not allowed to destroy their charitable purpose. We have known instances of refusal to attend, or to return to, a hospital by those ashamed to admit inability to contribute to the cost of their maintenance and treatment. This deplorable outcome of a too business-like reception is fortunately rare when the services of judiciously trained almoners are available, and it is satisfactory to know that more and more hospitals are employing them.

The Royal College of Surgeons of England is holding its Hunterian festival dinner next Monday evening. In the afternoon at 4 o'clock Prof. G. E. Gask will give a special lecture entitled John Hunter in the Campaign in Portugal (1762–63).

Sir Thomas Dunhill has chosen the surgery of the thyroid gland as the subject for the Lettsomian lectures which he is giving to the Medical Society of London on Feb. 15th, 24th, and March 1st. He will speak at the house of the Society, 11, Chandos-street, W., at 9 P.M.

On Thursday, Feb. 18th, and the following Tuesday Dr. P. M. D'Arcy Hart will deliver the Milroy lectures to the Royal College of Physicians of London at 5 P.M. He will speak on measures for the prevention of pulmonary tuberculosis among adults in England—in the past and in the future. Members of the medical profession will be admitted on presentation of their cards.

INDEX TO THE LANCET, VOL. II, 1936

The Index and Title-page to Vol. II, 1936, which was completed with the issue of Dec. 26th, is now in preparation. A copy will be sent gratis to subscribers on receipt of a post card addressed to the Manager of The Lancet, 7, Adam-street, Adelphi, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

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[1] Statistical Review of the Work and Finance of the London Voluntary Hospitals for the year 1935. Published by King Edward's Hospital Fund for London. Pp. 44. 1s.

should similarly be made compulsory and extended to all types of grant aided schools, and that in these schools, too, the education authorities should have to establish canteens and to provide a hot midday meal It is suggested that the cost of these schemes should be taken on in three stages in the first stage the cost would be limited in extent and some charge be made to the families, in the second there would be lower charges and wider application, and in the third the parents' payments would be abolished. The cost of the three stages is estimated, respectively, at some 23, 44, and 65 million pounds and would be met by the Exchequer and local authorities These plans are one way of meeting a need which undoubtedly exists even if its extent has not been gauged They are put forward with practical knowledge of the problem, and they would safeguard the nourishment of the coming generations in a more effective way than grants in money or in kind could ever do Moreover, they are designed to help adult nutrition by relieving parents of some expenses One cannot help wishing however that the argument had not made use of two questionable implications The first is that the occurrence of some physical or mental defect or impairment of health in 27 per cent of 3000 "unselected" children was attributable to malnutrition The second is that the expenditure of 60 million pounds would be neutralised by saving on the expenses of sickness It will be seen from our Parliamentary Intelligence that some of Mrs Drake's arguments were used in the House of Commons on Feb 3rd but failed to produce a majority in favour of a change in policy One cannot help noticing, however, that in each successive debate the Government defend themselves by explaining that the provision of milk and meals has now in fact been increased.

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[1] Physical Training and Recreation Cmd 5364 London H M Stationery Office 1937 Pp 12 2*d*

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THE Royal College of Surgeons of England is holding its Hunterian festival dinner next Monday evening In the afternoon at 4 o clock Prof G E. Gask will give a special lecture entitled John Hunter in the Campaign in Portugal (1762-63)

Sir Thomas Dunhill has chosen the surgery of the thyroid gland as the subject for the Lettsomian lectures which he is giving to the Medical Society of London on Feb 15th 24th, and March 1st He will speak at the house of the Society 11 Chandos street W at 9 P M

ON Thursday, Feb 18th and the following Tuesday Dr P M D'Arcy Hart will deliver the Milroy lectures to the Royal College of Physicians of London at 5 P.M He will speak on measures for the prevention of pulmonary tuberculosis among adults in England—in the past and in the future. Members of the medical profession will be admitted on presentation of their cards

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INDEX TO "THE LANCET, VOL. II 1936

THE Index and Title-page to Vol. II 1936 which was completed with the issue of Dec. 26th, is now in preparation. A copy will be sent gratis to subscribers on receipt of a post card addressed to the Manager of THE LANCET 7 Adam street, Adelphi W C 2 Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now

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[1] Statistical Review of the Work and Finance of the London Voluntary Hospitals for the year 1935 Published by King Edward Hospital Fund for London Pp 44 1s.

PRINCIPLES OF MEDICAL STATISTICS

VII —FURTHER PROBLEMS OF SAMPLING DIFFERENCES

In the previous section the calculation of the standard error of a proportion was based upon a knowledge of the proportion to be expected from some past experience—e g , if past experience shows that on the average 20 per cent of patients die, how great a discrepancy from that 20 per cent may be expected to occur by chance in samples of a given size In practical statistical work the occasions upon which such past experience is available as a safe and sufficient guide are relatively rare As a substitute for past experience the experimenter takes a control group and uses it as the standard of comparison against the experimental group For instance, as the result of the collection of data in this way, we may have the following figures —

50 patients with pneumonia treated by the ordinary orthodox methods had a fatality-rate of 20 per cent ,

50 patients with pneumonia treated by the ordinary orthodox methods *plus* special method X had a fatality-rate of 10 per cent

Is this difference more than is likely to arise merely by chance? It is clear that *both* these percentages will, by the play of chance, vary from sample to sample , if method X were quite useless we should, if the results of a large number of trials were available, sometimes observe lower fatality rates in groups of patients given that treatment, sometimes lower fatality rates in the control groups, and sometimes no differences at all In the long run—i.e , with very large samples—we should observe no material difference between the fatality rates of the two sets of patients , if method X is useless (but innocuous) the difference we expect to observe is, clearly, 0 Our problem is to determine how much variability will occur round that value of 0 in samples of given sizes, how large a difference between the two groups is likely to occur by chance In other words we need *the standard error of a difference between proportions*

DIFFERENCES BETWEEN PROPORTIONS

To return to the example previously adopted, let us suppose we take samples from a universe in which is recorded the number of colds suffered by each individual, and for each sample we calculate the proportion of persons who have no colds at all In the universe itself the proportion of persons having no colds is, we will suppose 10 per cent If we take two random samples from the universe, each containing 5 persons, we shall not necessarily observe a proportion of 10 per cent with no colds in each of these samples , in one sample we may obtain a percentage of, say, 20 and in the other a value of, say, 60, giving a difference of 40 per cent Is that a difference that is likely to occur by chance in taking two samples of 5 individuals from the same universe? As a test 100 *pairs* of samples of this size were taken from this universe After each pair had been taken the proportion of the 5 persons in each who had had no colds was calculated and the difference between these two proportions noted—e g , in the first sample 1 of the 5 individuals had no colds in the second sample 2 of the 5 individuals had no colds the percentages were therefore, 20 and 40 and the difference between the percentages was 20 This procedure gave the following distribution of *differences between the pairs*

—	Proportion of persons having no colds in two samples of 5 persons	
	Differences between percentages in the two samples	No of pairs of samples with given difference.
Smaller % in sample A than in sample B	−60	1
	−40	2
	−20	26
	0	45
Larger % in sample A than in sample B	+20	22
	+40	4
	+60	—
—	—	100

In nearly half the pairs of samples (45 instances) there was no difference between the percentages having no colds , but there was a considerable scatter round that difference of 0 that we expected to see For instance in 6 instances the percentage difference was 40 and in 1 it was as much as 60 The mean of the 100 percentage differences is very nearly 0, being −0 6, but very frequently a difference of 20 per cent was observed between one pair of samples The scatter of the differences round that mean may be measured, as usual, by the standard deviation , it is 18 0 The distribution of the differences round the mean is, it will be observed, fairly symmetrical, and in a distribution of that shape we know that values that differ from the mean by as much as plus or minus twice the standard deviation are of relatively frequent occurrence We may therefore say that in samples of this size, in which a percentage of 10 is expected in each, and therefore a difference of 0 between two samples, we may in fact easily observe by chance not that difference of 0 but one as large as ±2 (18)=36 per cent between the proportions in two samples, differences larger than that will be relatively rare.

Increasing the size of each sample to 20 showed a different distribution of differences between the pairs The largest difference between 2 samples is now only 25 per cent (larger differences would be observed if the numbers of samples taken were increased, but these large differences are so infrequent that they are unlikely to occur with only 100 pairs)

—	Proportion of persons having no colds in two samples of 20 persons.	
	Differences between percentages in the two samples	No of pairs of samples with given difference
Smaller % in sample A than in sample B	−25	—
	−20	6
	−15	6
	−10	15
	− 5	14
	0	27
Larger % in sample A than in sample B	+ 5	14
	+10	12
	+15	3
	+20	2
	+25	1
—	—	100

The mean of the difference between the 100 pairs is again nearly 0—namely, −1 3 per cent —but the scatter round that mean as measured by the standard deviation now becomes 9 5 , multiplying the size of the sample by 4 has reduced the variability of the differences by half In samples of size 20, in which a percentage of 10 is expected in each, and therefore a difference of 0 between two samples, we conclude that differences of ±2 (9·5) = 19 per cent between two samples may in fact easily occur by chance while greater differences will be relatively rare.

Finally taking pairs of samples of size 50 gave the *following distribution of differences in percentages* having no colds.

—	Proportion of persons having no colds in two samples of 50 persons.	
	Differences between percentages in the two samples	No of pairs of samples with given difference.
Smaller % in sample A than in sample B	−14	1
	−12	—
	−10	4
	− 8	6
	− 6	7
	− 4	2
	− 2	19
	0	6
Larger % in sample A than in sample B	+ 2	17
	+ 4	17
	+ 6	10
	+ 8	2
	+10	3
	+12	5
	+14	1
—	—	100

In the 100 pairs no difference between the proportions now exceeds 14 per cent. The mean of the 100 differences is +0·9 and the scatter round that mean as measured by the standard deviation is 5·7. In samples of size 50 in which a percentage of 10 is expected in each and therefore a difference of 0 between two samples differences of ±2 (5·7) = 11·4 per cent. will in fact be relatively frequent and greater differences relatively rare. The standard deviation or standard error of the differences decreases it will be seen with increasing size of sample.

STANDARD ERROR OF THE DIFFERENCE

The standard error of each proportion is, as shown in the previous section, $\sqrt{\frac{p \times q}{n}}$ where p is the percentage in the universe in one category—e.g. having no colds—and q is the percentage in the other category—e.g. having one or more colds—and n is the number of individuals in the sample. *The standard error of the difference between the two proportions* is it may be shown $\sqrt{\frac{p \times q}{n_1} + \frac{p \times q}{n_2}}$ where n_1 and n_2 are the numbers in the two samples. For instance in samples containing 5 individuals drawn from a universe in which $p = 10$ per cent and q therefore $= 90$ per cent the standard error of the difference between the proportion in sample A and the proportion in sample B is $\sqrt{\frac{10 \times 90}{5} + \frac{10 \times 90}{5}}$ = 19·0 per cent. In other words in a single pair of samples each containing 5 persons drawn from the same universe we may instead of obtaining the expected percentage difference of 0 quite easily get a difference of ± 2 (19) = 38 per cent. This theoretical value it will be observed agrees closely with the value that was obtained practically from the test; the differences found with the 100 pairs of samples of size 5 had a standard deviation of 18. Similarly the standard deviation of the differences between samples of size 20 was found in the test to be 9·5. The theoretical value is $\sqrt{\frac{10 \times 90}{20} + \frac{10 \times 90}{20}} = 9·5$. *Finally* the standard deviation of the differences between samples of size 50 was 5·7 and the theoretical value is $\sqrt{\frac{10 \times 90}{50} + \frac{10 \times 90}{50}} = 6·0$.

Clearly if we knew the proportion of individuals having no colds in the universe that we were sampling we could calculate the size of differences between two samples that might reasonably be expected to occur merely by chance in taking samples of a given size. If, for example from the universe used above we *took two samples of 50 persons and we treated* one sample with, say vitamin A and found in that sample the proportion of persons having no colds over a specified period of time was 4 per cent while in the sample not so treated it was over the same period of time 14 per cent. the standard error tells us that that difference is one which might easily arise by chance. The percentage difference between the two samples is 14 − 4 = 10 and this difference we have seen, has a standard error of 6 per cent. In other words in taking two samples of 50 individuals from the *same* universe we might easily obtain proportions in the two samples that differed from one another by as much as twice 6 per cent. a difference of 10 per cent is not, therefore a very unlikely event to occur merely by chance with samples of this size. The lower *percentage cannot safely be ascribed to* the effect of vitamin A for the same difference might quite often occur even if vitamin A were ineffective.

THE STANDARD ERROR IN PRACTICE

In actual practice we do not of course know the value of p in the universe in calculating the standard error we have to substitute for it a value calculated from the samples. In making this substitution two slightly different lines of reasoning are possible.

(i) We have observed two *samples of 50 persons* each and the proportion of persons with no colds is 4 per cent in one sample and 14 per cent in the other. Is it reasonable to suppose that these two samples have been drawn from one and the same universe in which the percentage of persons with no colds is "x" and that the differences of 4 and 14 from "x" are merely due to chance? Let us adopt the hypothesis that they *are* both samples of this one universe. Then the best estimate that we can make of "x" is given by the *whole* of the observations we have—i.e. *the percentage of persons having* no colds in our total 100 observations—which is 9. Our question now becomes this: If we take two samples each of 50 individuals from a universe in which the proportion of persons having no colds is 9 per cent are we likely to observe a difference of 10 per cent in the proportions observed in the two samples instead of a difference of 0? If the answer to this question is *yes* then we must recognise that though the difference observed *may* be a real one it is quite likely that it is only a chance difference which would disappear if we *repeated the experiment*. On the other hand if the answer is no we can conclude that our hypothesis that these two samples are likely to be drawn from the same universe is probably not true—i.e. these samples differ from one another by more than is likely to be due to chance and we are entitled to look for some other explanation of the difference between them.

In the example above the difference observed is 14 − 4 = 10 per cent. On the hypothesis outlined above the standard error of this difference is $\sqrt{\frac{9 \times 91}{50} + \frac{9 \times 91}{50}}$ = 5·7. The observed difference between the samples is less than twice its standard error and we conclude that its occurrence merely by chance is not a very unlikely event—that relatively often we might observe a difference of this magnitude If the difference had been 15 per cent we should have concluded that one of this magnitude was unlikely to have occurred by chance, since this difference is more than twice its standard error, and that therefore some cause (perhaps treatment with vitamin A if we are satisfied that the samples were equal in all other relevant respects) had led to the samples differing

(ii) The alternative approach is to make the hypothesis that the samples are in fact drawn from two different universes, we then test whether the results given by the samples are compatible with the hypothesis that the difference that ought to have been reached in sampling those two universes is zero—i e, that the two universes are in fact identical In this case we use as p and q the values found in each sample and the standard error of the difference of 10 per cent is equal to $\sqrt{\frac{4 \times 96}{50} + \frac{14 \times 86}{50}} = 5\ 6$ As the difference is not twice its standard error we conclude that there is no good reason for supposing that the two universes sampled are different (Some workers prefer to retain the hypothesis that the samples are drawn from the same universe We do not know the proportion in that universe but can take the different sample values as two separate estimates of it and use them as above for calculating the standard errors)

It will be noted that the two methods give very nearly the same results and in practice this is usually the case

DIFFERENCE BETWEEN TWO AVERAGES

The same type of test is applicable to the difference between two averages, or mean values For example, the mean height of a group of 6194 Englishmen is 67 38 inches and the mean height of a group of 1304 Scotchmen is 68 61 inches Are Scotchmen on the average taller than Englishmen or is the difference merely due to chance, inherent in sampling ? The standard error of the mean is, it has been shown, $\sigma/\sqrt{n}$, where σ is the standard deviation of the universe sampled and n is the number of individuals in the sample For this standard deviation of the universe we have to substitute the standard deviation of the sample The standard deviation of the 6194 Englishmen measured was 2 564 inches, and the standard error of their mean is therefore $2\ 564/\sqrt{6194} = 0\ 033$ The standard deviation of the 1304 Scotchmen measured was 2 497 inches, and the standard error of their mean is therefore 0 069 The standard error of the *difference* between the two means—i e, the amount of variability the differences might show if we took repeated samples of this size—is $\sqrt{\frac{\sigma^2}{n_E} + \frac{\sigma^2}{n_S}}$, where n_E is number of Englishmen and n_S is number of Scotchmen measured Unless the observed difference is at least twice this value it might easily have arisen by chance—i e, the difference between the means ought to be 0 and differs from 0 only by chance As with proportions we have two alternatives (i) We may substitute for the standard deviation of the universe the standard deviation of *all* our observations, Englishmen and Scotchmen, put together The value of this standard deviation is 2 595 By its use we are asking ourselves the question "Is it reasonable to suppose that we could draw two samples from one and the same universe, in which the standard deviation of the individuals is 2 595, and obtain two means differing from one another by as much as the difference between 68 61 and 67 38 ?" Inserting this value of the standard deviation we have as standard error $\sqrt{\frac{(2\ 595)^2}{6194} + \frac{(2\ 595)^2}{1303}}$, $= 0\ 079$ The difference between the two means is 1 23 inches, and this is 15 6 times the standard error, it is, therefore, very unlikely that we are drawing samples from the same universe In other words, Scotchmen are on the average taller than Englishmen—presuming the samples to be representative of the nationalities

(ii) Alternatively we may use the formula $\sqrt{\frac{\sigma_E^2}{n_E} + \frac{\sigma_S^2}{n_S}}$, $\sqrt{\frac{(2\ 564)^2}{6194} + \frac{(2\ 497)^2}{1304}} = 0\ 076$ In this case the difference between the averages is 16 2 times its standard error In this test we are presuming that we have drawn the two samples from universes which differ in the variability of their individuals (or from one universe, of the variability in which we have two estimates) and we want to know whether they differ in their means The two methods give closely the same results

It must be remembered that none of these methods is applicable to very small samples Finally a moment's consideration ought to be paid to the level of significance adopted. It has been shown that values, whether of an average or a proportion, that differ from their mean by more than twice the standard deviation are relatively rare As a conventional level twice the standard error is therefore adopted, and differences between values in two samples which are greater than twice the standard error of the difference are said to be "significant" In fact, differences of this size would occur by chance nearly 5 times in 100 tests If a worker regards this test as too lenient he can raise his level of significance to $2\frac{1}{2}$ or 3 times the standard error, with these levels, differences would occur by chance, roughly, only once in 80 tests and once in 370 tests The problem is always one of probability and the worker is at liberty to adopt any level he wishes—so long as he makes his test clear For this reason it is better to say in reporting results that the observed difference is, say, 2 5 times its standard error, rather than that it is "significant" The latter term will be read as implying that the difference exceeded the conventional level of twice the standard error The worker who wishes to make the test more stringent may be reminded that he may thereby be classing as chance effects differences that are real, he who tends to be too lenient may class as real differences that are due to chance With borderline cases there is only one satisfactory solution—the accumulation of more data

Summary

In practical statistical work the problem that most frequently arises is the "significance" of a difference—e g, between two proportions, two means, or any other values The difference between two such values in a pair of samples will fluctuate from one pair of samples to another, and though the samples may be drawn from one and the same universe we shall not necessarily observe a difference of 0 between them The object of the statistical test is to determine the size of the difference that is likely to occur by chance

(*Continued at foot of opposite page*)

SPECIAL ARTICLES

THE FACTORIES BILL

BEFORE this appears Sir John Simon will have moved the second reading of the Bill to consolidate and amend the *Factory and Workshop Acts 1901–29* and the biggest public health measure of our time will be before the House of Commons We were able to indicate last week the main changes proposed in existing practice and we may well congratulate those who have thought them out with such care. The Bill contains within it so much that is valuable that those who hope to achieve social progress at one stroke should not permit their anxiety to allow them unduly to obstruct the passage of the Bill into law

Especially good are the General Safety Provisions (Part II) which are obviously the work of men who know their job But surely means of access to fire escapes (§35) should not only be marked by a printed notice but should also be kept free from obstruction (as required in §33) ?

Among the General Health Provisions (Part I) §3 aims at securing a reasonable temperature in a work place and provides the control over braziers, gas fires, and stoves, with their risk of carbon monoxide poisoning, that recent experience has shown is so necessary It is perhaps open to question whether a minimum temperature of 60° F is high enough to guard sedentary workers against the ill effects of body cooling §2 gives power to modify the proposed regulations respecting overcrowding in existing work rooms in which effective mechanical ventilation is provided This might be a dangerous exemption. Is it possible to get effective ventilation in small rooms and shops (apart from air conditioning) without creating a draught ?

We regret—and our regret will be shared both by industry and the workers—that it was not possible to incorporate in the Bill more exact definitions of reasonable and adequate or effective standards to govern environmental conditions such as lighting and ventilation. The difficulties no doubt are great but the only alternative is to give such wide powers to the inspectorate as to make their responsibility very great.

§11 gives the Secretary of State power to make regulations for medical supervision in any factory in which excessive illness has occurred or in which potential risk of illness appears to him to be present Out of these powers we may hope to see the gradual development of a Health Service for Industry Since no guiding rules are laid down time alone can show what use will or can be made of this section

Under General Welfare Provisions §§41–43 govern the provision of washing facilities and the accommodation for clothing It appears that washing facilities are only to be required where a special need for them exists by reason of the amount of dust or dirt given off in the process or the dirty or offensive nature of the materials used Suitable accommodation for clothing not worn during working hours can only be enforced in occupations of a wet, dusty dirty or offensive nature ' in which workers are accustomed to remove part of their indoor clothing We may ask whether either of these two provisions really meets the health needs of a modern community

§45 which deals with welfare regulations is no doubt purposely vague Its effect must depend upon the nature of any new regulations which may be made as a result of its provisions Is there any reason, however why arrangements for preparing heating and taking meals should not be obligatory especially where night-work or shift work is carried on for more than 14 days at a time ?

Coming on to the Special Provisions §51 is welcome bringing under stricter regulation underground rooms used as factories §54 gives the Secretary of State power to prescribe the maximum weights which may be lifted, carried or moved. Medical opinion generally considers that no person ought to carry weights heavier than one-third of his body weight for any prolonged period of time

§57 prescribes the conditions under which women and young persons may be employed in certain lead processes It is hard to understand why these regulations should not apply to all persons (including men) who have to work in an atmosphere containing *lead dust.* Experience suggests that any concentration of lead above 1 5 mg. per 10 cubic metres of air is potentially hazardous We should like to see some definite standard stated for these operations and should wish also that every person whose work exposes him to a risk of lead poisoning should undergo regular medical examination A considerable number of painters still suffer from lead poisoning They should be as much under control as the accumulator makers. The definition of a lead compound as any *soluble compound of lead* appears to us unsatisfactory The solubility in water of the oxides or sulphates of lead for example, may be low but these compounds are sufficiently soluble in body fluids to give rise to poisoning Any lead compound which is soluble *in the body fluids in vivo* should be included within the definition.

In §110 provision is made for the medical practitioner who is employed by the occupier in connexion with the medical supervision of persons employed in the factory who acts as the examining surgeon for that factory for such purposes as the Secretary of State may direct." We question the wisdom of this provision It means as it stands that subject to the authorisation of the Secretary of State the medical officer (*part time* or *whole time*) of a firm may have to act at one and the same time in a semi judicial capacity and also as an employee of the firm.

Under Employment of Women and Young Persons §68 is likely to prove controversial. To permit a 9 hour day *and* a 48 hour week (or a 54 hour week for over half of the year) for women and young persons is an inadequate restriction of hours When a five-day week is worked a 10 hour working day is to be permitted and this may mean a 12 hour period *of employment* It seems *passing* strange that no legal limit should be set to the hours which a *man* can be asked to work.

But when this Bill has been safely passed—as we hope *it* will during the present session—large sections

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(Continued from previous page)

in samples of given magnitudes how far it may deviate by chance from 0 This involves the calculation of the standard error of the difference. In reasonably large samples this standard error of a difference may be taken to be the square root *of the* sum of the two individual standard errors of the values in the two samples

A B H

of the working population will still be outside the scope of the activities of the Home Office Inspectorate Health conditions in offices and retail shops in the distribution trades and in transport and agriculture ought next to receive the attention of the legislature If it is objected that the needed powers for the regulation of these occupations already exist in the Public Health and other Acts, the reply is that they are not being so used at the present time

OXFORD UNIVERSITY PARLIAMENTARY ELECTION

Sir Farquhar Buzzard, president this year of the British Medical Association, is standing as official Conservative candidate for the Oxford University seat, vacant by the retirement of Lord Hugh Cecil, for which the polling goes on from Feb 23rd to 27th In an influentially signed address circulated by his supporters it is pointed out that Sir Farquhar's responsibilities as regius professor will allow him adequate time for Parliamentary duties inasmuch as they do not involve the administration of a scientific department and are confined to a general superintendence of the medical status of the University

The other candidates in the election are Sir Arthur Salter and Prof F A Lindemann, F R S Sir Arthur takes his stand on the policy outlined in his book "Recovery" and in "The Next Five Years" Prof Lindemann, who occupies the chair of experimental philosophy in the University, is putting up as an independent Conservative

In his election address Sir Farquhar remarks that education and research are subjects on which a burgess of the University should be able to speak with some special knowledge and authority

> The enormous improvements, he says, which have been witnessed during the last 50 years in the general standards of living, the simultaneous decrease in poverty, crime, drunkenness and dirt, and the increased expectation of health and longevity are mainly due to better education and to the results of research in every field of knowledge
>
> Apart from my professional work, education and research have been my foremost academic interests, and during the last nine years I have enjoyed the great privilege of taking part in our University affairs as a member of the Hebdomadal Council and of the General Board of the Faculties, as a curator of the University Chest and of the Bodleian Library, in addition to holding many other positions of administrative responsibility As an ex-officio student of Christ Church and an honorary fellow of Magdalen I am well acquainted with the essential share which is taken by the Colleges in the endowment and organisation of teaching and research in the University
>
> This experience, together with that derived from membership of the governing bodies of several important public and secondary schools leads me to think that our older Universities preserve their great influence for good on the younger generation, are steadily progressive in their outlook and in their commitments on behalf of education and research, and thoroughly deserve the special representation which they enjoy in an assembly where these subjects are reviewed in public Both subjects need skilled handling and careful control Education, in particular, requires wise guidance lest its primary object, that of developing a balanced critical faculty, should be lost sight of amid the clamour for early specialisation along vocational lines

Personal knowledge of teaching and examining over many years as well as more recent acquaintance with the fundamental problems of University and school management should enable Sir Farquhar to take an effective share in debate when these matters are at issue in the House of Commons

PARIS

(FROM OUR OWN CORRESPONDENT)

A PARIS MONUMENT TO LAENNEC

LAST year the celebrations over the tomb of Laennec far from Paris brought together many leaders of the medical profession, some of whom wondered how no one had thought hitherto of erecting a monument in Paris itself This question has now become concrete in a committee charged with the duty of raising a worthy memorial The president of this committee is Prof Sergent, and among its members are Profs Carnot, Roussy, Bezançon, and many others A site for the monument has already been selected, and if the municipal parties are complacent, it will stand in the square of the Charité, at the junction of the Rue des Saints Pères and the Boulevard Saint Germain The amphitheatre in which Laennec taught at the Charité is, by the way, still in existence All who wish to commemorate the discoverer of auscultation in tangible form should send their contributions to M Doury, 4, rue de la Muette, Paris 16

A NEW FIRST AID HOSPITAL

The Fondation Marmottan was formally opened on Jan 14th. The building is in the 17th arrondissement, and its equipment is the last word in modern surgery It is intended for surgical cases of a strictly emergency character, and its accommodation for 47 in patients can be doubled if necessary The hospital is, of course, open day and night, and it epitomises the present tendency to comb out for operative treatment in the heart of the city only those cases representing emergencies The equipment of this hospital is, however, as complete and elaborate as the cases for which it is intended are essentially first-aid, urgent, and accidental.

IRELAND

(FROM OUR OWN CORRESPONDENT)

HOSPITAL DEVELOPMENT

THE Charter Day dinner of the Royal College of Surgeons in Ireland was held on Feb 6th in the hall of the college The president, Mr Adams A McConnell, said some important things about the future hospital system of the country, now under the consideration of the Minister for Local Government and Public Health. He referred to the labour of the Hospitals Commission which had "produced a masterly report of national importance" The commission had insisted on the coördination of the several types of hospital. The report had been a year in the hands of the Minister, and a year was not a long time to wait, but the members of the public and some doctors were becoming restive Nevertheless, it was better to wait even longer than to launch a scheme before its details had been fully worked out The population of Dublin has increased by about 80,000 since 1930 The Lord Mayor has more than once asked what the Dublin hospitals have done to meet the extra demand for beds As far as Mr McConnell knew 50 beds had been added to the general hospital beds since the Sweepstakes began. He had to point out that neither the medical profession nor the hospitals have power to increase the number of beds the Government alone has that power As regarded hospital development in Dublin the considered opinion of the leaders of the profession is in favour of the plan suggested by the commission —the extension of the Mater Misericordiæ, St. Vincent s and the Richmond Hospitals and the amalgamation of three or four of the smaller hospitals The profession he said, is opposed to the building of a large municipal hospital. Any deterioration of the Dublin hospitals would adversely affect the efficiency of the medical schools and lower the standard of the future profession of the country The president referred also to the recent establishment of a scheme for medical research reported in this column last week.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

GLASGOW WESTERN INFIRMARY

AT the annual meeting of the qualified contributors to the Glasgow Western Infirmary the chairman of the managers referred to improved extension schemes that are contemplated It is proposed to erect on the east side of the main drive a block for paying patients and for this purpose the constitution of the infirmary was amended so as to provide for pay beds A gift of £20 000 from the Gardiner Trustees was to be used for building the medical institute which would be under the charge of the new professor of medicine Prof J W McNee The ear nose and throat wards are also to be rebuilt. The Lord Provost stated that the corporation had no intention of taking over the voluntary hospitals, but, as the health authority for the city it was entitled to find out whether the voluntary system was providing the necessary accommodation Sir Hector J W Hetherington principal of Glasgow University pleaded for more care and attention to better equipment, with more workers in medical scientific departments by the coöperation not only of the voluntary hospital but of the municipal hospitals Sir Robert Bruce paid a tribute to Prof. Sir Robert Muir s 37 years service as pathologist to the infirmary to Prof T K. Monro who after 20 years service has retired from the regius professorship of medicine and to Colonel D J Mackintosh who has been medical superintendent of the infirmary for no less than 45 years and who has also retired

PUBLIC DISPENSARIES

The important part played by the public dispensaries in Edinburgh in the treatment of the sick poor was emphasised by Lord Provost Cumley at the annual general meeting of the Edinburgh Royal Public Dispensary The present building at Richmond street will be demolished as part of a slum clearance scheme and the corporation are contributing substantially towards the cost of building a new dispensary The value of dispensary work in the teaching of students is fully appreciated and the extensive use made of the dispensaries by the sick poor has been brought into prominence recently by the fact that in the new housing areas built under the slum-clearance scheme there is no such service available and the difficulty of providing proper medical services for the new housing areas has caused considerable concern.

NEW FEVER HOSPITAL

Arrangements have been completed for the building of a new infectious diseases hospital by Glasgow Corporation at Barrhead road. The proposed new hospital will replace the Shieldhall hospital, in which the accommodation and equipment are no longer considered adequate There will be provision for 352 patients and a third of the beds will be in individual cubicles There will be 3 two storey pavilions and 8 single storey pavilions. Full provision is being made for an operating theatre and X ray unit and for various routine and research laboratories The nursing staff will number about 180

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JAN 30TH 1937

Notifications—The following cases of infectious disease were notified during the week Small pox 0 scarlet fever 1414; diphtheria 1241 enteric fever 53 pneumonia (primary or influenzal) 3555 puerperal fever 43 puerperal pyrexia 108 cerebrospinal fever 32; acute poliomyelitis 4; acute polioencephalitis, 3 encephalitis lethargica, 0; dysentery 41; ophthalmia neonatorum 79 No case of cholera plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Feb 5th was 3596 which included: Scarlet fever 871; diphtheria 959; measles 17 whooping cough 590 puerperal fever 21 mothers (plus 10 babies) encephalitis lethargica 280 poliomyelitis 2 At St. Margaret s Hospital there were 16 babies (plus 7 mothers) with ophthalmia neonatorum

Deaths—In 122 great towns, including London there was no death from small pox, 2 (0) from enteric fever 8 (0) from measles 5 (1) from scarlet fever 27 (8) from whooping-cough 32 (5) from diphtheria 38 (18) from diarrhœa and enteritis under two years and 1155 (154) from influenza The figures in parentheses are those for London itself

Liverpool and Newport reported deaths from enteric fever Manchester had 3 deaths from whooping-cough Rotherham 2 Fatal cases of diphtheria were reported from 24 great towns Manchester 3, Leeds and Liverpool each 2

The number of stillbirths notified during the week was 257 (corresponding to a rate of 44 per 1000 total births) including 35 in London

AN appeal has been issued on behalf of the University of Oxford by Lord Halifax the chancellor and Mr A D Lindsay the vice-chancellor for help to enable certain work of the first importance to be set in hand the undertaking of which long deferred has now become a matter of necessity The sum of £250 000 is required for the endowment of the extension of the Bodleian library and a further £250 000 for other buildings Funds are also sought to maintain and equip new laboratories to knowledge; to meet the demands of the new school of medical research the ancillary sciences must be strengthened No definite total sum has been asked for but it is hoped that need and generosity will result in a very large amount Lord Nuffield has contributed the first £100 000 to the appeal. Copies of the appeal may be had from the vice-chancellor the Oxford University Appeal Old Clarendon Building Oxford where subscriptions may also be sent

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month, his name can be seen later in the half yearly index

FROM A ROVER

II

From considerations of prestige in respect of the individual doctor it is an easy transition to pass to the prestige of the profession as a whole Many of us lament that this is not what it was and is lower than it might be If we believe that it is good for the public, and also good for us that the status of medicine should be high it behoves us to inquire where the fault lies It has been said that nations get the governments they deserve, and it might be said with equal truth that society gets the doctors it deserves But might it not also be said that medicine gets the public it deserves? For inasmuch as the doctor is, or should be, a man or woman of culture above the average in the nation, and is specially trained in both the art and the science of medicine, he (I shall assume both sexes when for convenience, I use this word) has every right to lead, to teach, and even to dictate in his particular sphere,

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I believe that if he put this value upon himself and upon his services the public would not only respect him more, it would accept his guidance and his dictation with relief and with benefit As it is, the public persuades itself that it is as knowledgeable in matters concerning its health as the doctor himself, and, in many instances, only needs his services when it is out of its depth by grave illness, or when it sees that it can batten upon his known generosity in the disposal of his time and energy and even his blood

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CORRESPONDENCE

AFTER-CARE IN PULMONARY TUBERCULOSIS

To the Editor of THE LANCET

SIR,—I read with great interest Dr Trail's Mitchell lecture published in your issue of Jan 30th Dr Trail mentions that the year following the patient's discharge from sanatorium is a most vital one and that "not the least of the advantages to the case of artificial pneumothorax lies in the continual and expert supervision for a period of some three years following the induction," and goes on to say that "until such benefits are universally provided we must continue with the present results of sanatorium treatment"

I agree that this expert supervision is most valuable, but would point out that the dispensary provides this for all cases of tuberculosis, ex sanatorium patients, and others, for an indefinite period I wish that Dr Trail had placed greater stress on the importance of the social factor After many years' experience among that type of patient who, for financial reasons, insists on returning to work as soon as discharged from sanatorium, no matter how unsuitable the work may be, or who failing to do so drags out an unsatisfactory existence in unsuitable environmental conditions with an insufficient income, I am convinced that this country will never reap full benefit from the time and money spent on sanatorium treatment unless more money is spent on really useful care work Most valuable work could be done in this direction and the prognosis of many cases vastly improved if adequate funds were available

I am, Sir, yours faithfully,

R SEPTIMUS WALKER

Paddington Tuberculosis Dispensary
Talbot road London, W , Feb 8th

A SURVEY OF DIETS

To the Editor of THE LANCET

SIR,—The article in THE LANCET of Jan 30th which deals with the Medical Research Council Report No 218 is somewhat misleading, this may in part be due to the way in which the results of the surveys are presented in the actual report It was the calcium intake "per man" that was found to be over 0 68 g This conventional "man" unit may be justifiable in calculations of calories or even of protein, but is quite inapplicable when calcium is concerned, since the calcium requirements of growing children are as high or higher than those of adults According to the Stiebeling scale (which allows 0 68 g daily per adult man), the calcium requirement of a family consisting of man, wife, and three children, aged 3, 6, and 8 years, is 4 56 g, the "man value" of the family is 3 33 If the daily calcium allowance is only 0 68 g per "man," the family intake is only half the requirement, to be adequate the allowance "per man" must be 1 4 g daily This family coefficient method is equally inapplicable in the case of milk, and to a less degree in the case of iron

The article also states that 'in every group the amount of first class protein was considered to be above the minimum required." Actually all that is claimed in the report is that the fraction of the total protein that was derived from animal sources was over one third This seems an odd criterion of the adequacy of a diet A man might be only taking 10 g of protein and yet over half of his intake be first class protein Actually the average daily first class protein of 119 out of 259 families studied was under the level, 37 g, proposed by the Advisory Committee on Nutrition, in only 22 families was it over the standard, 50 g, of the Committee of the British Medical Association

I am, Sir, yours faithfully,

Bishops Stortford Feb 6th JOHN MARRACK.

STANDARD OF ARMY RECRUITS

To the Editor of THE LANCET

SIR,—I have read with interest Mr Flemming's letter in your issue of Jan 2nd He concludes his letter by asking whether candidates suffering from varicocele, who seek acceptance in Government service, are rejected "on observation or on tradition." Perhaps the correct answer is the latter—i.e, "we do it because we have always done it" Some of us, in our student days, have been warned to avoid meddlesome midwifery To day I regard the operation for cure of varicocele as meddlesome surgery

A varicocele, presumably, is a response of nature during the changes and development at the time of puberty If so, why surgical interference? Does one ever hear of a patient in the thirties complain of varicocele? I am unable to recall a single case of severe local injury or hæmorrhage as a result of normal athletic exercises in those possessing a varicocele But I have seen a number of cases requiring operation for the cure of secondary hydrocele following the operation for varicocele

Mr Flemming refers to varicocele as "a harmless anatomical condition" I agree If this be true, surely then varicocele is not a cause for rejection of candidates for any service

I am, Sir, yours faithfully,

PHILIP A HALL,

Feb 3rd Consulting Surgeon to the Royal Air Force

REST HOUSES FOR RHEUMATOID ARTHRITIS

To the Editor of THE LANCET

SIR,—I should like to express my entire agreement with the views so ably put forward by Mr W A Cochrane in your issue of Feb 6th, as well as in your leading article in the previous number I note with satisfaction Mr Cochrane's use of the term "medical orthopædist", it is too often forgotten that orthopædics is a branch of medical science calling for physicians as well as surgeons In the management of arthritis, if the physician has been given early and adequate opportunities for proper physical treatment, surgery will rarely be required The keynote of such treatment is rest combined with proper diet in suitable surroundings, together with mild physiotherapy in the form of massage, exercises, and perhaps sunlight. The model to be followed is the tuberculosis sanatorium linked up with out patient clinics in the large towns where the cases could be selected in the first instance and where after discharge from the sanatorium proper supervision and control could be exercised

While it may be necessary to rely to some extent on private generosity for the provision of such sanatoria and for the furtherance of research, in view of the drain upon the working capacity of the country due to rheumatic diseases and the present policy of the Government which aims to improve the physical condition of the people, the public purse should be called on for a large share in the cost of maintenance and ultimately for all. It is only fair to point out that a scheme for linking up out-patient clinics hospitals and sanatoria for the treatment of chronic diseases such as rheumatism was outlined about eighteen years ago by Lord Dawson of Penn and has been further developed since by Dr W S C Copeman and others including the present writer Public opinion is slow to arouse, but the idea is steadily gaining in popular support. An appropriate quotation from the Third Rheumatism Review issued by the editorial committee of the American Association for the Study and Control of Rheumatic Diseases may perhaps be permitted— The slogan of the few is becoming that of the many: something must be done to solve the enormous problem that is *rheumatism*

I am Sir yours faithfully

Buxton Feb 6th CHARLES W BUCKLEY

ANACIDITY AND LONGEVITY

To the Editor of THE LANCET

SIR,—Lerman Pierce and Brogan[1] observe that up to the age of sixty five there is a definite correlation between age and the incidence of gastric anacidity—i.e. the latter increases with age Beyond the age of sixty five however the number of anacid cases decreases

It would seem that there are only two possible explanations of this noteworthy observation. The one is that gastric anacidity disappears in aged people in whom it has previously been present This is unlikely because if gastric anacidity is favoured by some condition in old age as the statistical data suggest an improvement of this condition due to further ageing could not be expected. Consequently it is more probable that the only other possible explanation holds true according to which there is a comparatively increased death rate among those who are afflicted with gastric anacidity Further statistical studies are required to test the validity of this explanation.

I am Sir yours faithfully

New York City Jan 27th. EUGENE FÖLDES

HEARING AIDS

To the Editor of THE LANCET

SIR —I am much interested in the special article on hearing aids in your issue of to-day because it recalls to me my own experience when investigating their value in schools for the deaf more than twelve years ago Dr and Mrs. Ewing and Dr Littler found that of 236 deaf children 140 or more than half could benefit educationally by hearing-aids. In 1924 I was asked by the then school medical officer of the London County Council to undertake an investigation at the instance of the medical department of the Board of Education into the question of How far children in the hard-of hearing class can benefit by the use of special apparatus (see *Brit J Child Dis* 32 261) This work I accomplished in conjunction with Mr W H. Pettifor in a class then existing at Stanley street Deptford.

Thirty-seven scholars (20 boys and 17 girls) were examined of whom 35 were deaf from middle-ear conditions, 1 was born partially deaf and 1 was deaf from meningitis Of these 5 children had sufficient residual hearing to enable them to profit from special oral teaching and were therefore not included in the test Of the remaining 32 28 (87 5 per cent) were improved and 4 not improved

What was specially interesting from the point of view of easy working of the method was that the great majority of these good results were obtained with one type of instrument which clearly established the benefits which would accrue from installing such an aid in the class.

In my report I suggested that an experimental outfit should be installed in the class tested for one year to make certain as to its practical utility in teaching while an extended investigation was conducted at other centres At the same time I drew attention to the fact that in the United States aids of this kind had been for some time used successfully in their deaf and partially deaf schools. In addition I found a philanthropic friend who promised to be responsible for the cost of the installation. To my bitter disappointment my recommendation was turned down by the London County Council, its rejection being due (as was later made public) to the act of one lay official who it being nobody's special business to invite him to see the tests, was unfortunately not notified officially although he was asked unofficially This display of petty jealousy delayed the advent of a most valuable aid to deaf teaching for some ten years It is, therefore the more gratifying to know that later workers have confirmed my conclusions.

I am Sir yours faithfully

Wimpole-street W Feb 6th. MACLEOD YEARSLEY

RENAL TUBERCULOSIS

To the Editor of THE LANCET

SIR,—In your last week's issue, in commenting on our work you state (p 329) that treatment of the tuberculous kidney is in fact following in the wake of treatment of the tuberculous joint and that operation, if it is performed, is to be regarded as an unwelcome necessity Tuberculosis of a joint and of a kidney are the same in that they are both metastatic hæmatogenous lesions both should be subjected to the same sanatorium régime but they differ in the essential factor that local rest can be given to a joint but cannot be given to a kidney We have at present insufficient material on which to base an opinion about the healing of an ulcero cavernous renal tuberculosis, but it seems likely that these gross lesions do not heal except by autonephrectomy due to occlusion of the ureter In this case cessation of renal function is analogous to therapeutic rest of a joint Moreover if secondary infection of a tuberculous joint occurs healing by sanatorium treatment and other means is delayed if not prevented It remains therefore to ascertain what influence secondary infection has on the healing of renal tuberculous lesions

So far as we have been able to ascertain in our series of cases renal disease was nearly always bilateral One of the great benefits of sanatorium treatment lies in healing the minor lesion and rendering the inoperable patient operable Finally may we endorse the view that early diagnosis and sanatorium treatment of renal tuberculosis both before and after operation are essential if the prognosis is to be improved.

We are Sir yours faithfully

RONALD REID

M C. WILKINSON

Harley-street and Black Notley Sanatorium Feb 9th

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[1] Lerman J., Pierce F D and Brogan A. J (1932) *J clin. Invest* 11 155

MORE AND SAFER MILK

To the Editor of THE LANCET

SIR,—In your paragraph last week on More and Safer Milk you report the Minister of Health as having said that "the more the consumption of milk was increased the more important did it become to secure the safety of the supply" Most doctors would agree to this but how many are doing anything to implement it? Everywhere the public is being urged to drink more milk or to supply it to others The under five population and nursing mothers are likely to follow school children as subsidised recipients If a voice whispers "what of milk borne disease?" lay bodies brush it aside, saying "that is the doctors' business" It is the doctors' business but so few trouble to mind it They feel that the Ministry of Health should see to that The Ministry is up against the Treasury and the Treasury must consider agricultural interests too So the ball rolls from one to another with the net result of an increasing subsidy for unsafe milk.

Is not this an occasion when general practitioners might actively support medical officers of health by demanding that subsidy and safety should march together?

I am, Sir, yours faithfully,
ESTHER CARLING

Berks and Bucks Joint Sanatorium Oxon, Feb 9th

WANTED A HOSPITAL EMBLEM

To the Editor of THE LANCET

SIR,—Now that the matter of a hospital emblem in connexion with a Hospital Week in London is under consideration, it might be opportune to ask the College of Heralds to submit designs for a hospital flag which in miniature might be adopted for Hospital Week in London It would be a pity to have one emblem for Hospital Week in London and a flag of another design flown by hospitals on their fête days and on State occasions The council of the British Hospitals Association have had the matter of a hospital flag up for consideration and it is mainly the cost that has so far deterred them from taking steps to meet the wish expressed by several hospitals for a properly designed flag

I am, Sir, yours faithfully,
R H P ORDE,
Hon Secretary The British Hospitals Association.

Grosvenor-crescent S W, Feb 9th

RADIOGRAM AND RADIOGRAPH

To the Editor of THE LANCET

SIR,—In your issue of Jan 30th Radiogrammarian writes "*roentgenograph* and *roentgenogram* are too distinctively American to gain ready acceptance in this country" Far from being "too distinctively American" those words are not even distinctively American They, and the other derivatives of *roentgen* are used almost exclusively in the Scandinavian and German literature *Acta Radiologica's* preference for *roentgenology, roentgenogram,* &c, is well known, and there is, in my opinion, much to commend it Surely it is not inappropriate to name a science after its founder, or an X ray photograph after the scientist who made the first one?

Finally, why not be as international in our terminology as possible? If American, Scandinavian, German, and other roentgenologists prefer *roentgenogram,* &c, then I think that that is an excellent reason for using them in preference to the derivatives of *radio*

I am, Sir, yours faithfully,

Feb 4th ROENTGENOLOGIST

OBITUARY

S HARRY HARRIS, M.D Sydney, F R A C S

THE announcement of the death of Dr Harry Harris of Sydney, New South Wales, will have been read with deep regret by his fellow urologists Only last year he spent several months in this country, taking part in discussions, and demonstrating in our theatres his operation of prostatectomy with primary closure of the bladder At first condemned here, much to the disappointment of its originator, Harris's method of prostatectomy has steadily gained in favour and has been widely adopted Actually the first description of it appeared in a paper read at the Australasian Medical Congress held in Dunedin in March, 1927 Like many important original papers, however, it attracted little attention, and Harris's visit to Europe in 1935 was in the nature of a crusade against what he regarded as unreasonable prejudice He was determined to demonstrate the advantages of his method, and although he was in indifferent health, he worked with such industry that there were few who had not the opportunity of watching him operate His enthusiasm was infectious and he made many converts It will be a gratification to his friends that he lived long enough to see his work vindicated. It was no light task for a surgeon living in Australia to drive home his claims against a definitely hostile school of opinion but few obstacles could withstand his determination The majority of British genito urinary surgeons are now prepared to admit that although his technique is unlikely ever to be used as a routine, it has gained an important place in prostatic surgery

Another operation with which Harris's name is connected is that of renal sympathectomy For over eight years he carried out denervation of the renal pedicle and was therefore in a position to speak authoritatively of its scope and its limitations The condition in which he found that renal sympathectomy gave the most favourable results is the one for which he coined the somewhat awkward term of "renal sympathetico tonus" This condition of overaction of the sympathetic nerves of the renal pedicle he compared to Hirschsprung's disease of the large bowel, and his views on it were fully described in an article he published in these columns two years ago

Harris was educated at Sydney Grammar School, of which he was captain in 1900 He represented Sydney University at cricket, and after a resident post at Sydney Hospital entered general practice In 1914 he joined the staff of the Lewisham Hospital and from 1918 onwards he was purely a consultant Dying at the comparatively early age of 56, he leaves a widow and one son Two of his brothers are members of the medical profession

ANDREW DANIEL CLINCH, M D Dubl

Dr Clinch, who died on Feb 2nd, was formerly a medical inspector of the Department of Local Government and Public Health, and was one of the best known and best liked medical men in Ireland.

Educated at Belvedere College and Trinity College Dublin he qualified in 1898 and a few months later was appointed dispensary medical officer of the Clondalkin district Co Dublin whence he was later transferred to the Grand Canal-street district, Dublin During the war he served in the Royal Army Medical Corps in France. Shortly after his return to Ireland he was made a medical inspector of the Local Government Board, and he retained that position until his retirement three or four years ago As a Government medical inspector writes our Dublin correspondent, Clinch was an officer of singular ability Possessed of robust and shrewd common sense tactful kindly with a thorough and tolerant knowledge of his countrymen he succeeded in keeping up a higher standard of efficiency among the men and the institutions under his supervision than might have been effected by a more stern disciplinarian. Since his retirement from the public service he had taken trips to many parts of the world as a ship surgeon Outside his professional work Clinch was best known by his life-long interest in Rugby football. As a student he played for Dublin University and was given his international cap as long ago as 1892; when no longer eligible to play for the University he played for and was captain of the Wanderers Club Between 1802 and 1897 he played in ten international matches and in 1806 he toured South Africa with an Irish team. When his playing days were over he became one of the most active workers of the Irish Rugby Union on whose councils his common sense tact and popularity made him a power Of late years his health had failed, but his death came unexpectedly He had indeed been present to watch his favourite game and to join in a presentation to an old colleague only three days before his death.

Clinch had a great gift of making and keeping friends. His fellow-students of forty years ago found him the same at 65 as at 25 Meeting him at intervals of perhaps years there was no change in the firm hand grasp and none in the gentle voice and the kindly smile which went so unexpectedly with the massive and powerful physical frame.

CHARLES JAMES LEWIS M.D D.Sc F.R C P Edin

On Saturday last Dr Lewis died at Birmingham where much of his professional life had been spent and where he was emeritus professor of public health in the University Before going to Birmingham however he was for many years in practice in Edinburgh and it was in Edinburgh that he got his medical education His undergraduate career was distinguished he was president of the Royal Medical Society graduated with first-class honours and gained the Wightman prize He became a member of the general council of the University and in 1895 was elected a fellow of the Royal College of Physicians of Edinburgh In 1000 he took a science degree in public health and received the Gunning prize In the following year he also carried off the Parkin prize for an essay on the curative effect of carbonic acid gas and other forms of carbon in cholera, for different *forms of fever* and other diseases" and about the same time he was writing on typhoid bacilluria and the purification of drinking water He was now well launched on a public health career holding teaching appointments at the school of medicine of the Royal Colleges and elsewhere and an examinership at the College of Physicians With Dr Balfour he was co author of Public Health and Preventive Medicine and his medical interests ranged from the bacteriology of the nose and of the atmosphere to problems of demography It was especially as a bacteriologist interested in public health that some thirty years ago he was appointed to Birmingham, where he became university lecturer and chief bacteriologist under the professor of pathology Dr Leith. A colleague who joined him as junior in 1907 writes Dr Lewis was very deaf and it was said that increasing deafness had obliged him to give up a lucrative general practice and take to bacteriology for his livelihood. For some years we worked together often in the same room, and I came to know him very well. He was a most gentle kind and courteous man I do not recollect him ever complaining of anything or saying a harsh or unkind word. In his work he was scrupulously honest and in his research he recorded everything that told against him just as carefully as the facts which favoured his opinions I do not remember him ever accepting the findings of anyone in the laboratory He insisted on seeing and doing everything for himself For a great deal of his original work others got the credit Dr Lewis seemed quite indifferent to fame or money At that time his favourite recreations were golf and bridge. He was a very keen golfer and he seemed to spend every Sunday at the Sandwell Park Club where he played regularly till ill health and weakness made exertion impossible He was a most lovable little man rather diffident in most things but most unwaveringly obstinate in his insistency on accuracy and truth in his laboratory work and in his records and writings

Dr Lewis's inquiries at Birmingham including observations on the non lactose-fermenting bacilli and on Morgan's bacillus were published in reports to the Local Government Board. After the late war he was made director of the public health laboratories of the University and associate professor of public health and on his retirement a year or two ago his valuable services were recognised by conferring on him the title of emeritus professor

MAX SCHLESINGER M.D Budapest

In Dr Max Schlesinger who died on Feb 4th at the age of 30 medicine has lost a research worker of brilliant promise and considerable achievement A Hungarian by birth, he was greatly attracted by physics and mathematics After taking his medical degree at Budapest he turned his attention to the physical properties of viruses and bacteriophages and for a number of years did remarkable work under Prof Bechhold at Frankfurt A year ago he came to this country and after a few months at the National Institute for Medical Research was appointed to the staff of the Imperial Cancer Research Fund.

Among the notable results achieved by Schlesinger was the successful application of the method of centrifugation to the study of the particle sizes of viruses and bacteriophages. Recently he evolved a simple method whereby the Sharples centrifuge might be used for this purpose He also conducted extensive studies on the purification of phages by a method involving fractional filtration and centrifugation A weighable amount of phage was finally obtained and studied as regards its chemical composition and its optical and staining properties.

Bishop Auckland Cottage Hospital.—Sir George Gillett commissioner for the Special Areas has decided to make a grant of over £10 000 towards the cost of rebuilding and re-equipping this hospital

PARLIAMENTARY INTELLIGENCE

FEEDING OF SCHOOL-CHILDREN

In the House of Commons on Feb 3rd Mr SHINWELL moved —

"That, in view of the disquieting reports regarding the physical condition of children, this House is of opinion that, out of moneys provided by Parliament provision should be made for supplying, in addition to milk, at least one meal per day to every child attending an elementary or secondary school"

The question of under feeding and improper feeding was, he said, closely related to the question of health The Labour party would never be content until all children, at school or otherwise, irrespective of parental income, were every day in the year provided, not with one meal, but with all meals that were required for their sustenance They recognised, however, that there were some practical difficulties in the way They must raise wage standards to a much higher level and unemployment must disappear, they must reorganise production and distribution of foodstuffs before that was attained But meantime they wanted an assurance from the House of Commons that at least one substantial meal a day would be provided for children attending school Although some improvement in health was manifested among school children, the position was far from satisfactory In his annual report the chief medical officer of the Board of Education said —

"The reports of school medical officers throughout the country generally do not suggest that there has been any deterioration in the nutrition of school children Where statistics relating to heights and weights are given there is almost invariably an increase shown compared with the statistics of previous years"

But the chief medical officer added —

"The question may, however, be not so much as to deterioration but whether the degree of progress is as satisfactory as it might be That good nourishment does exist in certain areas and in certain sections of the population is hardly to be contested There are areas in which severe depression, continued for many years, has left its mark"

There was, of course, considerable variation in the condition of school children in different parts of the country In the special areas the deterioration was most marked In Hebburn, for example, according to this report, a substantial increase in the measure of deterioration had recently been recorded Dr Burn, the medical officer who went to that district not long ago, said —

"I have tried to examine the children in an unbiased way, and with not too exacting a standard in mind Perhaps previous experience of areas where unemployment is less severe colours my impression, for I must admit that the state of nutrition of Hebburn children is decidedly inferior to that of the children of more fortunate areas"

Then Dr Burn went on to say —

"Our children bear on their bodies the marks of the economic hardships of recent years"

Independent investigations had recently been undertaken throughout the country by teachers in actual contact with the children In Durham county several teachers had declared that there seemed to be a remarkable difference between children coming from homes where there was prolonged unemployment and those where wages were regular, that many of the children were thin and starved looking and that in physique, mental alertness, and ability they were much below the standard of five years ago and were decidedly backward in lessons and easily tired One head master stated that, in his own school of over 400 children at least one-third showed the need for more food. He went on to say —

'The provision of milk has prevented the situation from becoming worse, but many show signs of distress in spite of the milk ration"

It was too often thought that under nourishment was confined to the special areas, but that was far from being true In the London area, 189,203 school children were medically examined during 1935, only 32,934 were in excellent health The ill-health of the remaining five-sixths was regarded as due mainly to under nourishment Opinions were expressed in previous reports of the Board of Education in relation to the survey of 3000 unselected children between the ages of two and six Excluding dental and eye defects, 27 per cent of them suffered impairment of health Admittedly, more and better food could effect a substantial change in the health and physique of school-children. Sir John Orr had stated that the result of tests on children showed that improvement of the diet in the lower groups was accompanied by improvement in health and increased rate of growth

The Labour party regarded the existing provisions as hopelessly inadequate Two conditions were laid down before meals could be provided The incomes *of parents must not go beyond a certain scale* The other condition was that, irrespective of income, it must be firmly established, as a result of medical inspection, that a child was unable, because of its physical condition, to absorb education Both these conditions were highly objectionable If it was found necessary to impose conditions he would rather have the income condition than the other If they were to establish physical fitness, and if it was agreed that sound feeding was the basis of physical fitness, the provision of meals, whether of milk or otherwise, should form part of the educational system of this country

The first objection to the proposal was on the ground of cost No matter what the cost, no price was too high to pay for the assurance that school children were being properly nourished But the Minister had exaggerated the cost His estimate was based on the retail price of milk at about 1*s* 4½*d* a gallon But they knew that millions of gallons of milk were sold in this country for manufacturing purposes at round about 5*d* a gallon. Clearly, if those engaged in the milk-producing industry had an assured market, they could afford to sell the milk at a much lower price If the Minister regarded the cost on that basis as too high, his conception of the needs of school-children was quite different from that of the Labour party

In spite of the milk ration children required more and better food It had been firmly established that thousands of children went short Where there had been prolonged unemployment parents were unable to pay for the meals, and if, the local authorities because of heavy rating burdens, were unable to provide the funds, the State must come to their assistance The Minister had assumed a cost of 5*d* per meal, but in Bradford, where they had been providing free meals to school children for many years, the total cost of foodstuffs, overhead charges cost of canteens and of transport was 3½*d* per meal In Edinburgh the cost of the food was less than 2*d* per meal It was very doubtful whether 3*d* is required in order to make up the overhead charges In London they learned that the cost of the meal alone was less than 2*d* If meals were provided regularly there would be some reduction in the amount of disease amongst school-children The whole nation would gain in health, in vigour, in physique, and, above all, in food production, if this motion was accepted

AN AMENDMENT

Miss CAZALET moved the following amendment —

"That this House welcomes the measures taken by the Government to promote the physical welfare of children, recognises the beneficial results already achieved, as shown by the annual reports of the chief medical officer of the Board of Education and hopes that where necessary the powers already possessed by local education authorities for the purpose will be more fully utilised

It would she thought be a great waste of public money to insist that all children should be fed irrespective of whether they required it or not, whether their parents wished them to have it or not and whether they were being properly fed in their own homes School medical officers throughout the country did not suggest that there had been any deterioration in the nutrition of children report after report afforded testimony to improvement Walsall Eccles, Wakefield Cumberland Cannock and a host of others all showed there had been hardly any malnutrition The better economic position of the country and the decrease in unemployment played no small part in the general health and physical well being of the children. The great milk scheme had been described as the largest experiment in supplementary school feeding that the world had ever seen. Nearly 3 000 000 children were benefiting under it and she believed nearly 400,000 were receiving free milk daily With regard to actual meals, it was the function of the education authority to see that all children who attended school were in a fit and proper condition to take advantage of the education In London there was not a single child whose education needed to suffer because of under-nourishment or malnutrition, and she believed that that was the case in many parts of the country Nearly double was being spent on meals alone to-day compared with 1930–31 It was true that some of the tables of the chief medical officer's report showed that things were not so satisfactory in certain areas where there was a higher percentage of children in categories C and D than any of them would like to see She asked the Government to ease the situation in those districts where education authorities, owing to poverty were not able to take full advantage of the powers they possessed

PARLIAMENTARY SECRETARY'S REPLY

Mr Geoffrey Shakespeare said that no one could read the chapter on nutrition and school feeding in the annual report quoted by Mr Shinwell without being impressed by the unanimity of school medical officers that there was no general deterioration in health in spite of economic strain. Anyone who compared the state of children now with the state ten years ago their appearance their alertness and physical well being must see the improvement that had taken place There were six weapons on which the Government relied to counter the effects of the economic strain.

(1) There was the increasing attention given to the state of nutrition in the routine inspections and the assessment of the state of nutrition on more careful and uniform lines

Mr Cove That is by the doctors —Mr Shakespeare: Yes

Mr Cove We do not know what the standard is

Mr Maxton: And that is once in five years

There was also the growing practice of arranging special nutritional surveys at short periods

(2) The second weapon was the increasing provision of supplementary nourishment whether milk meals or free meals for children whose parents were unable to pay

He had chosen three years to show how steady had been the advance In the year 1924–25, 132 local education authorities provided for some 70 000 children 7 500 000 free meals whether they were solid or milk meals In 1930–31 153 local education authorities provided 185 000 children with 27 000 000 free meals and in 1935–36, 235 local education authorities provided 470 000 children with 86,500 000 free meals In other words in that interval the number of local education authorities providing free meals had grown from 132 to 235 the number of children fed had increased sevenfold the number of meals provided had increased 11 times and the cost had quadrupled Clearly there had been great progress in the provision of free supplementary nourishment In spite of the fact that distress to-day was less than it was in 1931 there were three times the number of free meals provided to-day as compared with 1931

Mr Shinwell had raised the question of Circular 1443 of December 1935, which was issued in agreement with the Association of Education Committees That circular made plain what was the qualification for free extra nourishment and laid down that it covered the cases of all children who needed it and were unable to pay for it Such provision could be made if a child showed the slightest symptom of inability through lack of food, to profit by its education It was not left to nutritional surveys to take note of these symptoms. It was made plain that teachers and others who were in constant touch with the children could make recommendations on that basis The Board of Education did not lay down any income scales but the local authorities laid down a scale which assured that the children of those who were employed at low wages, or who were unemployed came within the category of those who could be provided with free meals

Mr Shinwell: That is perfectly true but only if after examination by the school medical officer children are found to have symptoms which indicate that they are unable to absorb education.

Mr Shakespeare: We look at it of course from an educational point of view Where through lack of food the children are unable to profit by the education given free nourishment should be provided

Mr Maxton: You say the teacher may be the judge of that

Mr Shakespeare: The teacher may recommend a case as coming within that category and the child is then examined by the school medical officer Education now included physical training and if a teacher thought there was the slightest symptom of a child not being able to profit by physical training on the ground of lack of food free extra nourishment could be provided

(3) The third weapon on which they relied was what was commonly called the milk-in-schools scheme and over 2 500 000 children had been provided for by facilities which covered school attendance of over 90 per cent. of the elementary school population He thought it was true that this was the greatest single nutritional experiment in the world They had only to read the glowing account of Dr Petrie in the chief medical officer's report to see how very widely this scheme had benefited the children. The Government would like to see many more children enjoy the benefits of it With that end in view they sent a skilled investigator last year to find out why no more than 50 per cent of the children took this free milk His report confirmed what had been his own impression since he had been at the Board, that non participation was due either to indifference on the part of the parents or more usually a distaste for milk on the part of the children

(4) The fourth weapon on which the Government relied was the promotion of physical welfare by improving the facilities for and the standard of physical training in the schools

(5) The fifth was the provision of meals at school canteens where there was a local demand Indeed, in connexion with the reorganisation of the education services which was actually going on the senior schools had as a rule school canteens at which the children could get at least a good dinner at a reasonable charge

In Kent some 63 public elementary schools had canteens serving dinners to 5000 children In East Sussex some 25 elementary schools served 1800 children and in East Suffolk 15 schools served 1208 children The charge in the canteen arrangement for meals varied from 1s to 1s 8d. per week. That charge did not as a rule include overhead costs

(6) Another important point was the instruction of boys and girls in the new science of nutrition. It took the form of teaching cookery, and 91 per cent of the girls, aged 11 years or over, who received instruction in cookery, also were instructed in nutrition They were taught such matters as food values, the cost of food, the value of meals, and what were the best foods to cook There was much ignorance among all sections of the community as to what constituted a balanced diet

He would conclude with some figures in relation to the physical welfare of children given in the report of the chief medical officer In his survey children were divided into four categories, A, B, C and D, according to whether their nutrition was excellent, normal, slightly subnormal, or bad Out of 1,687,000 children examined in England and Wales in 1935, 14 6 per cent were found to be excellent, 74 1 per cent were normal, 10 6 per cent were slightly subnormal, and 0 7 per cent were bad In regard to London out of 189 200 children, 152, or 0 08 per cent, were bad, and 10,646, or 5 67 per cent, were slightly subnormal The rest were satisfactory It did not follow that if a child was slightly subnormal the primary cause was lack of food The cause might be environment, like bad housing and lack of sleep, or functional It might be the result of disease, infectious or otherwise When he asked the doctor in charge of the experiment at Aldershot recently on the sub standard recruit, to what he attributed the improvement in the physical welfare of those sub-standard recruits, he said that clearly good nutrition and intensive physical training were factors, but that in his judgment the regular hours of routine to which the recruits were subjected was a factor no less important

The amendment was carried by 167 votes to 124

PHYSICAL TRAINING OF THE NATION

In the House of Commons on Feb 8th Mr **Oliver Stanley**, President of the Board of Education, moved a supplementary estimate for education services in England, Wales, and Scotland Dealing with the Government's plans for physical training, he said that the new scheme had had a most encouraging response from the general public It was designed to deal with physical training and recreation, it was not and never had been meant to be a plan to deal with nutrition Physical training and nutrition were complementary, not exclusive No one would regard physical training and recreation as a substitute for good nourishment, but to give the impression that the great mass of our people were so underfed and so weak from the lack of nutrition that they were unable to derive enjoyment or profit from physical training in games was a grotesque mistake Mr Stanley then explained the scheme in detail, and said that Lord Aberdare had consented to become president of the Advisory Council

Sir **Francis Fremantle** said it was true that to get the best use out of physical exercises there should be proper nutrition and medical and dental attention at school It did not follow, however, that they should wait until they had perfection before they made any advance with physical training The medical profession as a whole would be out to help the Government in their scheme It was essential that there should be a considerable change in medical education which in the past, had been the training of doctors in hospital to treat those who were sick Students had not been properly taught this ideal of producing healthy bodies

Sir **Ernest Graham Little** asked what methods were going to be adopted to see that positive harm was not done by the physical training of persons who were under-nourished He pointed out that the voluntary associations, which were being entrusted with so much of the work under the Government's scheme were completely unequipped to undertake medical service

The vote was agreed to

NOTES ON CURRENT TOPICS

Regency Bill Physicians and a Sovereign's Incapacity

In the House of Commons on Feb 4th, when the Regency Bill was considered in Committee, Mr **Logan** called the attention of the Home Secretary to the words (in Clause 2) " on the evidence of physicians or otherwise " In determining the mental condition of the monarch he took it that the duty would rest upon the evidence of physicians But the words " or otherwise " appeared to allow a latitude which was not intended in the Bill —Sir **John Simon** replied that the reason for the phrase was that while the main evidence in any such case would be that of skilled professional medical men, who had been attending the case, it would be true in any tribunal that wanted to gather information that the information would not be necessarily confined to physicians It might be nurses or other persons who had something in the way of information to contribute to the evidence to be considered It would be some comfort to Mr Logan to know that the Speaker of the House of Commons, the Lord Chief Justice of England, the Lord Chancellor, and the Master of the Rolls would be among those who would have to form this conclusion. He would be prepared, if it was the wish of the Committee, to exclude from the list of persons who had to make the declaration that the Sovereign was totally incapable the person who would become Regent, and who for the time being would act in the Sovereign's place One could conceive that a slightly invidious situation might otherwise arise —Mr **Ede** said the question was entirely medical The distinguished people mentioned in the clause had to be satisfied that the Sovereign was by reason of infirmity either of mind or body wholly incapable of performing his functions No one but medical people could properly express an opinion on that Those who had been associated with great mental institutions knew the great difficulty of a layman, no matter how distinguished, in dealing with mental cases As the clause was now framed there need be no evidence from a physician at all. There might be a case where people would be prepared to act without taking the evidence of physicians, or would ignore the evidence submitted by physicians There should be some provision in the Bill that physicians must at least give some evidence and that their evidence should be considered.—Sir **Archibald Sinclair** said that if the world came to the conclusion that he was mad he would be very sorry to have his case judged solely by specialised evidence He would much prefer to have it based on the opinion of ordinary common sense people who knew him well Where were the specialists to get their evidence ? A doctor by looking at a man could not discover if he was insane He had to get his evidence from someone, ' or otherwise " He had seen many reports of criminal cases in which eminent men with a great knowledge of mental disease had sworn diametrically opposite opinions

Clause 2 was ordered to stand part of the Bill and the Committee stage of the Bill was concluded

On consideration of the Bill on report, Mr **Logan** moved to leave out the words " or otherwise "—Mr **Ede** seconded the amendment He could not understand on what these distinguished people were going to act in deciding whether a person was physically or mentally incapable of discharging the functions of the Crown, unless it be medical evidence Could it be expected that these people would allow other evidence than medical evidence to outweigh the evidence submitted by distinguished alienists ?—Mr **Maxton** urged the Home Secretary to accept the amendment He agreed that it would not do to place their destinies as individuals merely in the hands of medical men. But the clause already met that point by having responsible experienced laymen to survey the expert medical opinion and decide whether it justified them in addition to their own knowledge as ordinary men in proposing that the King should not perform his functions, but that a Regent should be put in his place —Earl WINTERTON said he shared Mr Maxton s difficulty as to the wording of the clause as it stood —Sir J SIMON said he had not the slightest shadow of doubt that the words as drawn as far as he had any power to construe an Act of Parliament were perfectly appropriate to the case He was not prepared to contemplate the proposition that some unidentified successor of the Speaker in alliance with the Lord Chief Justice, the Lord Chancellor and the Master of the Rolls was in any conceivable circumstances going to arrive at a conclusion of this sort except upon material which four wise impartial people would accept He could conceive a case of obvious infirmity of body where they would not want elaborate expert evidence He was, however quite prepared that when the Bill reached the House of Lords there should be substituted some such words as these—

declare in writing that they are satisfied on evidence which shall include that of physicians He did not think it would make any material difference At the worst it would only mean that in some conceivable case which they hoped would never arise an eminent medical man would receive a fee for doing something which any honest human being could do

The amendment was by leave withdrawn and the Bill was read the third time

The Marriage Bill : New Medical Grounds for Nullity

EPILEPSY

On Feb 3rd the Marriage Bill was further considered by a standing committee of the House of Commons and Mr SPENS moved an amendment to delete the provision that nullity should be granted where a person was at the time of the marriage subject to recurrent fits of insanity or epilepsy Complete lunacy was already a ground for nullity and the question of mental deficiency was dealt with in another amendment Epilepsy often developed into some form of mental deficiency or insanity in which case it would be covered by the other provisions —Sir ARNOLD WILSON (speaking for the promoters) said these provisions were recommended as long ago as 1912 in both the majority and minority reports of the Royal Commission on the Marriage Laws The Commission reached the unanimous conclusion that recurrent fits of insanity or epilepsy should constitute a ground for nullity To the best of his knowledge the conclusion of the Commission had never been challenged On divorce yes but on nullity no The promoters only desired that this should be a ground of nullity where there was ignorance on the part of the other spouse of its existence at the time when the contract was made Epilepsy was normally hereditary and the consequences were disastrous Epileptics should be regarded as a class apart and be treated with the utmost humanity and sympathy, but they should not be regarded as fit members of society —The amendment was by leave withdrawn

MENTAL DEFECT

Sir A WILSON moved to delete the provision that nullity would apply when a state of mental unsoundness had become definite within six months of the marriage and to substitute the provision that nullity could apply where either party was at the time of the marriage or had been within twelve months of the marriage placed in an institution or under guardianship under Sections 3 6 8 or 9 of the Mental Deficiency Act 1913

Section 3 he said conferred power on the State to deal with defectives on the instance and on the initiative of parents. Under Section 6 it was possible to place defectives under guardianship upon petition after a full judicial inquiry before a court at which both sides had to be heard There were the most careful provisions against the consent of the parent or guardian being unreasonably withheld but it was provided that consent should not be deemed to be unreasonably withheld if withheld with the bona fide intention of benefiting the defective There was full provision for medical examination by two doctors and for a medical certificate Section 8 related to mental defectives who had been proved guilty of criminal offences, had been confined in an ordinary prison and were found on medical inquiry at the instance of justices to be mentally defective and were certified as such Section 9 the most important of all referred to persons found to be lunatics, often under the orders of the court and placed in a lunatic asylum, criminal or other and who were thereafter considered by doctors not to be insane but to be mentally defective

The borderline, said Sir A Wilson was narrow Alternatively there were men and women who had been confined in gaol for various offences against the State when the court had not had evidence before it that they were mentally defective but on examination, and after being watched, the conclusion was reached that they were mentally defective, and were certified under this Act If this amendment was inserted in the Bill it would be impossible for any persons to be the subject of a petition for nullity unless they had appeared before a court with full medical evidence as to their condition and unless they had had every opportunity of appearing or of having their own doctors.—The amendment was agreed to

VENEREAL DISEASE

Commander BOWER moved an amendment to leave out the paragraph providing that venereal disease should be a ground for nullity In the present state of medical knowledge opinion was he said, very much divided as to whether venereal disease was curable or not It was only within the last few years that great strides had been made in curing this type of disease and particularly in the case of hereditary disease. None of them could feel too strongly about the man or woman who would deliberately contract a marriage while suffering from such a disease But they must remember that venereal disease was often contracted innocently So long as a cure was probable or even possible, it was entirely wrong to allow a marriage to be dissolved when the person suffering from the disease might within a short period be again in perfect bodily health.—Sir A. WILSON said the promoters of the Bill intended at a later stage to define more closely venereal disease which had not yet been defined in any statute. They were endeavouring to produce a definition restricting it to those forms of the disease which were unquestionably perilous to the offspring as well as to the other spouse and which were also substantially not definitely curable but probably incurable as far as the recurrent possibilities of infection presented themselves He anticipated that it would be possible so to define the disease as to exclude those forms of venereal disease which were innocently contracted and which if properly treated, were seldom transmissible —The amendment was by leave withdrawn

Sir A. WILSON moved to leave out the words in a communicable form. If he said they properly defined venereal disease the words became unnecessary —The amendment was agreed to

On Feb 9th, before the Committee stage was concluded a new clause was added to the Bill providing that a person of unsound mind should be deemed under care and treatment while detained under the various Acts or as a criminal lunatic or while receiving treatment as a voluntary patient for a time following, without interval this period of detention and not otherwise

Medical Practitioners and Professional Secrecy

In the House of Commons on Friday Feb th Sir ERNEST GRAHAM LITTLE moved the second reading of the Medical Practitioners Communications (Privilege) Bill. He said that this was a Bill to provide that certain communications between medical practitioners and their patients should be privileged from disclosure The protection asked for had been rendered more necessary by certain circumstances which had arisen in the past 20 years and the difficulty really arose, or became accentuated, when the Royal Commission on Venereal Disease in 1916 demonstrated an incidence of that disease in our country so alarming that it became clear that very energetic measures were necessary to combat it The Local Government Board took up the recommendation and issued a very important series of regulations in 1916, which remained the operative measure in all hospitals and clinics in this country and the success that had followed had been very remarkable The Commission had stressed the importance of absolute secrecy if anything of a private nature was communicated to the doctor in charge of a case. The number of patients treated for these diseases to-day ran into astronomical figures, and that was the position which was being threatened by the present law Doctors and patients alike had regarded the rules as being a real protection, until two cases occurred in which medical men were called upon by the judge to give to a court certain information They objected, but they were told by the judges that they had no privilege and were obliged to reveal confidences made by the patient, even under those personal assurances The incidents aroused the interest of the medical profession and of the public, and the British Medical Association had vainly urged the Minister of Health at the time to see that his own regulations were carried out and to introduce legislation to prevent such an incident happening again The judge's ruling had, of course, conformed to the law of the country, but it was the medical view that the law required alteration

In 1927 Sir Ernest had introduced a Bill and on the advice of legal friends in Parliament had restricted its operation to venereal disease He had received support from medical, legal, and lay press and from eminent legal friends, who had welcomed the Bill as an opportunity of ventilating the subject The present Bill, without the restriction to venereal disease, had been "vetted" by one of our foremost judges, who had assured him that in his opinion its clauses were adequate to make its abuse highly improbable The principles embodied in it had also a very wide application to the treatment of maternal mortality, especially in the unmarried, and to cases under the National Health Insurance Act

The "professional secret," he went on, was absolute in almost all European countries, including France, Germany, Italy, Norway, and Switzerland, and its revelation was usually a criminal offence At an international conference in 1935 the resolution was unanimously passed "that the confidences of the patient to his doctor should be legally protected except in cases where professional secrecy would conceal crime or shield the criminal from proper punishment" It was improbable, therefore, that any serious disorders would result from the extension of the practice in this country which had been successful abroad He had been told by legal friends that if he restricted the operation of the present Bill to venereal diseases they would have less objection to it, but in that case the imputation would at once arise when the protection was pleaded in a court of law that the person pleading was, in fact, subject to venereal disease There was an increasing number of other cases, not venereal, in which it was equally urgent to get this protection, but if he could not induce the House to pass the Bill with the wider application he would be perfectly prepared to restrict it to venereal cases —Mr LOVAT-FRASER seconded the motion for the second reading

Mr DINGLE FOOT moved the rejection of the Bill He said that if it were confined to the question of venereal disease there might be something to be said for it Under the Bill a doctor must not give evidence of anything that he had discovered in the course of his treatment for the purpose of a cure, except in two very limited categories dealing with fraud and crime It appeared to him that the privilege might attach not to the patient, but to the doctor, who might be able to refuse, or might even be prevented from giving, evidence on his patient's behalf It would also make it exceedingly difficult for anyone to bring an action for negligence against a practitioner Either the doctor would be prohibited from giving evidence at all, or he could, in any case, refuse to give evidence He thought that as the Bill stood the consequences of its passing into law would be simply appalling

Mr ERNEST EVANS seconded the motion for rejection. He said the Bill was putting into the hands of the medical profession a privilege to which they were not entitled, and was imposing upon them a responsibility which very few of them would wish to have It might also involve considerable unfairness to the patient and interfere with the course of justice

Sir T O'CONNOR, Solicitor General, said he was afraid that he would have to recommend the House to refuse a second reading to the Bill The prime aim of the law was to secure justice, and it was very difficult to justify a privilege at all, for by its very nature it might involve doing injustice between man and man or between man and the State It had been held, however, that there were some cases where greater mischief would probably result from requiring the truth than from permitting the truth to be withheld, but these were very few Whose was the privilege? There was no definition in this Bill, but he was inclined to think that it was the doctor's There would be some remarkable consequences if this Bill, or anything like it, was passed. Indeed, he thought there was hardly any branch of the law, civil or criminal, in which the passage of this Bill in anything like its present form would not impede the administration of justice He was sorry that he could not hold out any hopes that any pruning or alteration of the Bill could make it a workable measure It was therefore one of those cases in which, with every sympathy for the intentions of the reformer, one could not help feeling that he was creating more anomalies than he was attempting to remedy

The motion for the rejection of the Bill was carried without a division.

Maternity Services in Scotland

In the House of Commons on Feb 4th, when the Maternity Services (Scotland) Bill was considered by a standing committee, Mr GUY moved an amendment that the authorities should arrange for domiciliary midwives to be supplied by such voluntary organisations as the Queen's Institute of District Nursing —Mr T M COOPER, Lord Advocate, said that fears that the subsection covering this point would be deleted were groundless, and the amendment was withdrawn.—An amendment moved by Mr PETHICK LAWRENCE that an anæsthetist should be available when recommended by the practitioner was agreed to —Mr LEONARD moved that consultations should only be with practitioners specially qualified in midwifery —Mr ELLIOT, Secretary of State for Scotland, said the selection of such a panel would be a very delicate matter, and on his suggestion the amendment was withdrawn.

Mr ELLIOT moved an amendment to ensure cooperation between the local authority and recognised medical schools and institutions for training midwives, this was agreed to

Sir ARCHIBALD SINCLAIR asked for the deletion of the subsection providing that fees for confinement should be paid to the local authority out of the woman's maternity benefits, with her authority Mr Elliot agreeing, the amendment was accepted

QUESTION TIME

MONDAY FEB 1st

Herbalists and Medical Practice

Sir Ernest Graham Little asked the Minister of Health whether in view of the claim that an Act (34 and 35 Henry VIII) dealing with herbalists gave to this section of unregistered practitioners the right to engage in medical practice without compliance with the Medical Act 1858 thus defeating the purpose of this Act to enable the public to distinguish between qualified and unqualified practice he would make provision to secure the repeal of this legislation of 400 years ago — Sir Kingsley Wood replied: I am advised that the Act of 34 and 35 Henry VIII enabled the persons named therein to treat certain medical conditions without incurring penalties under an earlier Act of the same reign which had given a monopoly of practice to physicians and surgeons approved thereunder by the Bishop and that it does not give to these persons the rights which are secured by registration under the Medical Act 1858 The latter Act however as the hon Member is aware does not prohibit practice by unregistered persons There appears therefore to be no conflict between the two Acts and I do not feel called on to take action in the direction suggested in the question

WEDNESDAY FEB 3RD

Black-coated Workers and Health Insurance

Mr Vyvyan Adams asked the Minister of Health when the promised scheme for the insurance of black-coated workers would be submitted to the House —Mr Hudson Parliamentary Secretary to the Ministry of Health replied: My right hon friend is not yet in a position to say when this Bill will be introduced but its preparation has now reached an advanced stage

THURSDAY FEB 4TH

Coroners and Alleged Press Persecution

Sir Assheton Pownall asked the Home Secretary whether he was aware of two further recent cases of persecution by members of the press; that in one case the coroner commented on a press photographer's disregard of the decencies of the case and in the other the coroner censured members of the press for behaving callously to a young girl whose fiancé had been found gassed and whether he would take further steps to compel the Newspaper Proprietors Association to stop the suffering caused by these intrusions by their representatives

Sir Percy Hurd asked the Home Secretary if his attention had been drawn to a case in the St Pancras coroner's court last Friday when it appeared that a journalist and a press photographer obtained admission to St Mary's Hospital Islington and the coroner commented on their scant regard for decencies in their treatment of a dying patient also to a case when the North Dorset coroner last week censured press representatives for having treated a young girl callously after the suicide of her fiancé in order to make a sensational story for their papers and whether seeing the recurrence of such cases the Government would give facilities for the passage of the Journalists (Registration) Bill now before the House whereby such conduct would come under disciplinary review by a body representative of all branches of the journalistic profession —Sir J Simon replied: I am in communication with the Newspaper Proprietors Association and the Newspaper Society on the whole subject and I am sending those bodies these further instances of complaint

Physical Training in Schools

Mr Gordon Macdonald asked the President of the Board of Education the number of physical training organisers in employment in the schools of England and Wales giving separate figures for Lancashire —Mr Oliver Stanley replied: There are 236 organisers of physical training in England and Wales, employed by 1 0 local education authorities In the geographical county of Lancashire there are 26 organisers employed by 17 local education authorities The county local education authority has recently appointed 2 organisers

Medical Inspection of School-children

Mr Day asked the President of the Board of Education what regulations were in force regarding the length of time local authorities should keep records of medical inspections of children during the time they were at school after they have left school and whether these were preserved or destroyed —Mr Oliver Stanley replied: The Board have issued no regulations on the subject but when asked for advice by local education authorities they have recommended that the records of medical inspection should be retained for about five years after the child leaves school and they understand that this is the usual practice for example in London the records are kept until the child's eighteenth birthday and in Birmingham for a period of five years

Sir F Fremantle Will provision be made for the use of these records by factory inspectors or other officers of the factory inspectorate?

No further answer was given.

Health Propaganda

Mr Rhys Davies asked the Minister of Health whether, in view of the fact that in America and other countries insurance companies spent large sums on health education he had examined the possibility of securing the coöperation of British insurance companies in the proposed national campaign for health education and physical training and whether he proposed to invite the insurance companies to contribute towards the cost of the national campaign.—Sir Kingsley Wood replied The general question of health education and propaganda is now under consideration but I understand that some work of this nature is already undertaken by insurance companies and I should certainly welcome its extension

MONDAY, FEB 8TH

Mr Bose's Condition

Mr Jagger asked the Under Secretary of State for India whether his attention had been drawn to the fact that Mr Subhas Bose was running a temperature and had recently lost 20 lb in weight and whether in view of the reported seriousness of Mr Bose's condition and public anxiety in India in this matter he would give instructions that Mr Bose be set at liberty and allowed the opportunity for proper medical attention either in India or abroad—Mr Butler replied: In view of his state *of health* Mr Bose was transferred in December from Kurseong to the Medical College Hospital Calcutta in order that he might receive medical treatment and I am confident that he has every facility there for obtaining proper attention

TUESDAY FEB 9TH

Cardroom Workers and Respiratory Illness

Mr Sutcliffe asked the Home Secretary whether he was now able to announce the constitution of the committee appointed to ascertain if a workable scheme could be devised for providing compensation for cardroom workers disabled by respiratory illness —Mr Geoffrey Lloyd Under Secretary Home Office replied My right hon friend much regrets the delay in constituting this committee but he can assure the hon Member that he is anxious to set it up as soon as practicable

Medical Practitioners and Treatment of Gas Cases

Mr Sandys asked the Home Secretary whether his department had drawn up a list of medical practitioners who had undergone an approved course of training in the treatment of gas cases; if so how many there were whether each had been allocated a prescribed district; and what arrangements had been made to mobilise their services in an emergency —Mr Geoffrey Lloyd replied Up to the end of January rather over 1500 medical practitioners had completed courses of anti gas training given by the 10 Home Office *medical instructors* originally appointed Six additional medical instructors are now at work As it is the aim to give this training to all medical practitioners in the country who are willing to receive it, there should be no need to allocate individual doctors to particular districts, but lists are available from which it would be possible at any time to notify to local authorities the names of those who had been trained in their respective areas

Mr SANDYS asked if the hon gentleman could say at what rate these practitioners were being trained, and whether all practitioners had been notified personally of the existence of this course

Mr LLOYD said that practitioners had not been notified at present, though arrangements were available locally for the purpose Doctors were being trained at the rate of 2000 a month

Health Insurance and Dental Treatment

Mr ROSTRON DUCKWORTH asked the Minister of Health whether he would submit to the appropriate authority the decision as to whether post dental surgical treatment should be a matter for the dentist or for the surgeon—Mr HUDSON, Parliamentary Secretary to the Ministry of Health, replied My right hon friend has no power to submit to any tribunal the general question raised by my hon friend The question whether any particular treatment is a service which a doctor can be called on to render under his insurance contract can be settled only on the facts of each individual case

PANEL AND CONTRACT PRACTICE

What is a Name?

No 7 of the medical certification rules gives instructions as to the particulars to be inserted in certificates issued to insured persons, these are to include the date of examination, the name of the patient, and a concise statement of the specific disease or bodily or mental disablement by which he is rendered incapable of work The practitioner must sign the certificate in his own hand and append the date on which he signs it, and must see that his name and address is stamped on the certificate The writing on the certificate must be in ink or other indelible substance All of which injunctions are simple and reasonable but they are not always followed Thus a practitioner recently pleaded the influenza epidemic as justification for writing certificates in ordinary lead pencil Another resented being asked to give something more than the surname of the insured person, and said that unless the approved society could satisfy him that any useful purpose would be served by the inclusion of initials he would continue merely to give surnames This point was settled some years ago, when the Minister of Health was asked to amend the rule so as to make it plain what constituted a name He was then advised that the surname alone is not the "name" of the patient within the meaning of the rule, and that in order to comply with the rule the christian name or initials of the patient must be inserted

Medical Mortgages Again

A firm of solicitors complained to an insurance committee that a practitioner had left his practice and "purported to transfer it" although he had mortgaged the practice to their clients, a firm of moneylenders, and had assigned his panel cheques to the mortgagees The committee replied that the practitioner had in fact retired from their medical list The solicitors then wrote that the reply did not meet the case, and proceeded "There is, as you know a definite mortgage, of which you are aware, and you have permitted something to happen to the prejudice thereof, and we should like to know what you propose to do in the matter You do not even indicate the name of the practitioner in whose favour Dr X has purported to retire" Needless to say the committee did nothing in the matter, and by this time the solicitor has probably learnt that the assignment of fees does not mean that the insurance committee need concern itself with anyone other than the practitioner so far as the insured patients are concerned.

Messages about Certificates

An insurance practitioner has had to appear before a medical service subcommittee because he listened to messages given by an insured person as having been sent by her approved society While the practitioner was on holiday his locum issued an intermediate certificate in mistake for a "first" The patient remained incapacitated and under treatment until a month later when she told the doctor that her society required a first certificate in respect of the earlier consultation He refused then, but a few days later she told him she had consulted the secretary of the society who had instructed her to ask again for a first certificate and for intermediate certificates covering the intervening period The doctor complied with what he regarded as the society's request, and subsequently the society referred his action to the insurance committee At the hearing the secretary said he would not request the issue of certificates other than in accordance with the regulations, but he volunteered the information that the patient in question finds it hard to understand English and he admitted having sent her back to the doctor to have the original certificate exchanged The committee had to find that the practitioner had committed a breach of the Terms of Service in antedating the certificates but they contented themselves with warning him of the necessity for the strict observance of the medical certification rules, while the complainant society will read with no particular satisfaction the sentence of the report which expresses the view that "clearly there could be no intention on the part of the practitioner to mislead the society, and it is perhaps unfortunate that messages should have been conveyed from the society to the practitioner by an insured person who, the society say, experiences difficulty in understanding English" Again and again practitioners have been warned that they should look with extreme suspicion upon messages which are alleged to have been sent by societies or their agents We need only mention the pregnant woman who has been told she is *entitled to sickness benefit and to get certificates* from her doctor

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LONDON COUNTY COUNCIL HOSPITALS—The hospitals committee have reported to the London County Council the acceptance of tenders for hospital improvements costing over £125,000 These include the construction of a nurses' home at Hammersmith Hospital and the remodelling of the out patient department at St George in the East Hospital

GERMAN RADIOLOGICAL CONGRESS—The twenty eighth congress of the German Radiological Society will be held from April 12th to 14th at Breslau under the presidency of Prof Pleikart Stumpf The principal subject for discussion will be diagnostic and therapeutic technique its results and applications Further information may be had from Prof Karl Frik, Berlin, N W 87, Brückenallee 22

PUBLIC HEALTH

Influenza

THE figures for the toll of influenza in the week ending Feb 6th were not available when we went to press, but there can be little doubt that the graph had we been able to bring it up to date would now show a substantial drop for England and Wales following the earlier drop for London and the south eastern area It should soon be possible to construct a diagram illustrating the inexorable sweep of the epidemic from London west and north In the week ending Jan. 30th the great towns (outside London) with the highest death roll were Sheffield 65 Birmingham 56 Manchester 40 Leeds and Liverpool each 31 Warrington 28

A Maternity Scheme for Smethwick

Under the terms of the Midwives Act 1936 local authorities were required to submit proposals to the Ministry of Health for a scheme to come into operation on March 1st. In Smethwick (a county borough with 80 000 inhabitants) on the basis of last year's figures there should be about 700 confinements to be attended solely by midwives and 240 cases where a doctor will be in charge and the midwife present only as a maternity nurse. A scheme to provide domiciliary attendance on this basis was drawn up by Dr Hugh Paul the medical officer of health in September and was submitted in succession to the M. and C W committee the local doctors the midwives in the area, and was finally confirmed by the borough council on Jan 27th Accepting the Ministry s suggestion of 70 cases a year for a midwife or 30 for a maternity nurse the scheme proposes the appointment of seven municipal midwives with a senior midwife to exercise clinical supervision over them The town has been divided into eight districts in each of which one of these eight midwives is required to live. The eight places have been filled by applicants, 1 from London 3 from Smethwick and 4 from Birmingham They will receive a salary of £200 × £10–£250 with an allowance for uniform and travelling expenses. This is the same as the health visitors scale The senior inspecting midwife will receive £260 × £10–£300 One of the existing midwives has been required to surrender her certificate and will receive compensation on a five years purchase basis and one other has elected to surrender her certificate claiming three years compensation Antenatal and postnatal work will be done by the municipal midwives either in the patient s home or at the council s clinics where 90 per cent. of the expectant mothers already attend A graduated scale of fees has been drawn up based on gross family income five shillings being deducted for each child under 14. Attendance is free if the income is under 45*s* weekly and there is no maternity benefit the fee rises from £1 to a maximum of £2 10*s* where the income is over 65*s* These charges are about half those made for in patient treatment at St Chad s Hospital

MEDICAL NEWS

University of Cambridge

On Feb 5th the following degrees were conferred —

Ph.D —Inderjit Singh, M B
M B B Chir —J S Minett and A D D Broughton
M B —W H C M Hamilton
B Chir —O C Lloyd J S Ellis, and W S Nutt

At recent examinations the following candidates were successful :—

D M R E.

Part I —A P Booth, Jean Bouchard, A B Brereton J A Brocklebank, C. J O. Cooke, M W Dahab (with distinction) G G Doel, A M Evans T H T Gantly Muriel O Gibson, David Gold William Irwin, J L. King, Manuel Lederman C T MacCarthy, M A M Marel, J R. M Martin Ved Prakash Harold Pringle R R Rishi Aby Sirry C P Theron D C. Virmani, and J W Winchester

University of London

Mr H L Eason has been reappointed representative of the University on the General Medical Council

Applications for grants to assist original medical research from the Thomas Smythe Hughes and Beaverbrook funds should be made to the academic registrar between April 1st and May 15th A research studentship in physiology of the annual value of £100 will shortly be awarded Further information may be had from the academic registrar

Royal College of Physicians of Edinburgh

A quarterly meeting of the college was held on Feb 2nd with Dr W T Ritchie the president in the chair The following were elected to the fellowship : Dr Ernest T Roberts (Glasgow) Dr Eustace Russell (Brisbane) and Dr Douglas J Campbell (Southampton)

British Institute of Philosophy

An address will be given by Prof W G de Burgh entitled the Modern Gospel of Unreason on Tuesday Feb 16th at 8 15 P.M., at University College Gower street London, W C Application for tickets should be made to the director of studies at University Hall, 14 Gordon-square W C 1

Post graduate Course in Paris

A fortnight s course on vascular and renal diseases rheumatism and disorders of the endocrine system will be held at the Hôpital Necker Paris under the direction of Prof Maurice Villaret from March 8th to March 20th A further course on nutritional and digestive disorders will be held from April 10th to May 4th A visit to Vichy will be paid in connexion with the second course Further information may be had from the Laboratoire d Hydrologie et Climatologie thérapeutiques Faculty of Medicine Paris

Milbank Memorial Fund

Dr Frank G Boudreau has been appointed executive director of this Fund from April 1st in succession to the late Edgar Sydenstricker

A graduate in medicine of McGill University Dr Boudreau served in Europe during the late war and worked on meningitis among the troops on Salisbury Plain In 1925 he was appointed statistician-epidemiologist on the staff of the Health Organisation of the League of Nations and at present he is chief of the League s service of epidemiological intelligence and public health statistics.

St Andrews University

At a meeting of the general council particulars have been given of the chair of dental surgery which is to be instituted at the University The chair is to be in the faculty of medicine but the professor appointed will not be an examiner in the faculty ; otherwise he will be in the same position as the other professors The chair has been endowed by a gift of £17 500 and it is hoped that in addition a grant will be obtained from the Dental Board which will enable a full salary to be paid to the professor

The plans have been approved by the university court for the erection of an additional wing to form an extension of St Salvator s Residents Hall for men students in St Andrews at an estimated cost of £40 000 Grants have also been made for alterations to the students union at Dundee the library buildings of University College Dundee and the residence for women students in Airlie place Dundee

St George's Hospital

At the annual meeting of the ladies association of this hospital it was announced that, as a result of entertainments organised by the association last year, over £12,000 has been collected for the rebuilding fund

A Course in Orthopædic Surgery

A post-graduate course in orthopædic surgery will be held at the Royal National Orthopædic Hospital 234, Great Portland street, London, W, from March 8th to 20th Those taking part may attend operating sessions and the practice of the hospital Application should be made to the secretary

Royal Microscopical Society

On Wednesday, Feb 17th, at 5 30 P M, Dr J A Murray, F R S will address a meeting of this society to be held at B M A House, Tavistock square, London, W C He will speak on a method for paraffin sections of insect and other chitinous material

Lectures on Pacifism

On Feb 15th, Feb 22nd, March 1st, and March 8th, at 8 P M at the Conway Hall, Red Lion square, London, W C, Dr Graham Howe will give four lectures on pacifism Their titles are anxiety, aggressiveness, guilt, and wisdom Lord Allen of Hurtwood will take the chair at the first lecture Tickets may be had from 99, Clare court, Judd street, W C 1, or at the door

Lectures in Hospital Administration

A three months' course of lectures and demonstrations on clinical practice and hospital administration will be given by Dr J V Armstrong at the Brook Hospital, Shooters Hill, Woolwich, S E, on Mondays, Wednesdays, and alternate Saturdays, beginning on Monday, April 5th Further particulars may be had from the medical officer of health of the London County Council, Public Health Department (Specials Hospitals) County Hall, S E 1

Friern Hospital for Nervous and Mental Disorders

On Feb 5th Mr Herbert Morrison, leader of the London County Council, opened the new nurses' home at this hospital, which was formerly known as Colney Hatch Hospital As far as possible the home has been planned to avoid overlooking the hospital buildings It has four storeys and contains a dining room which will seat 100 nurses, a kitchen, sitting rooms, and a "quiet room" Sleeping accommodation is provided for 117 nurses Till now most of the nurses have been living in scattered quarters throughout the hospital Mr Morrison pointed out that modern treatment insists more and more on helping the individual patient and less and less on restraint and the sinking of the individual in the mass This new attitude threw more work and imposed a greater strain on the nursing staff who have the right to expect to be housed in a reasonable degree of comfort in the hospital in which they work and which is also their home The total cost of the building and its equipment is £23,500

Edinburgh Medical Missionary Society

At the annual meeting of the Edinburgh Medical Missionary Society on Jan. 28th, the president, Dr R A Fleming made a strong appeal for increased financial support The work of this society consists in assisting financially in the medical education of men and women who wish to devote themselves to medical missionary work in connexion with any of the Protestant Churches, and also in maintaining two hospitals overseas, as well as the well known Livingstone Dispensary in the Cowgate, where the students of the Society receive their training in dispensary and mission work and from which important medical work is done in one of the poorest districts in Edinburgh The annual report shows that the income last year fell short of expenditure by £3000 The costs had increased both in their hospitals abroad and in their work in Edinburgh The health authorities wanted them to assist in the medical work of the new housing area at Niddrie to which some of their Cowgate patients had been moved but in view of the deficit the Society could not undertake this fresh financial responsibility unless the authorities offered definite financial aid and the matter was therefore at present in abeyance

British Empire Cancer Campaign

The Duke of Gloucester has consented to become the president of this body

Scunthorpe War Memorial Hospital

This hospital, which was opened seven years ago, must now find £25,000 for extension as well as a considerable sum for maintenance

Rotherham Hospital

This hospital of 130 beds has to raise £12,000 for improvements and alterations It was built in 1873 when it had only 25 beds

Hospital Cooperation at Liverpool

The Liverpool city council has approved of the establishment of a Liverpool hospitals joint committee which is to be a permanent body securing coöperation between voluntary and municipal hospitals

Yateley and District Hospital

An extension to this hospital has been opened, consisting of a new ward, operating theatre, X ray department, and accommodation for the staff

Leeds Women's Hospital

A new ward, costing £7000, and an operating theatre were opened at this hospital on Feb 1st In order to pay for the extensions the hospital has had to incur a bank overdraft An additional annual outlay of £2000 will also have to be found for maintenance

Night Motor Service on Merseyside

The hospital night volunteer motor service of this district, which held it annual meeting recently, has in five years answered over 2000 night calls to take relatives to the beds of seriously ill people or to bring blood donors to the hospitals from their homes

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Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning

SOCIETIES

ROYAL SOCIETY OF MEDICINE 1, Wimpole-street, W

TUESDAY Feb 16th

General Meeting of Fellows 5 30 P M

Pathology 8 for 8 30 P.M (Lister Institute Chelsea Bridge-road, S W), E Klieneberger and D B Steabben The Filtrable Symbiont L1 of *S moniliformis* and its Relation to Bronchiectatic Conditions in the Rat Lung M H Salaman Serological Experiments with Elementary Bodies and Soluble Substance of Vaccinia Virus G H Eagles Some Electrocardiograms from Experimental Monkeys A S Macfarlane and C R. Amies Demonstration of New Ultracentrifuge Installation R Robinson E Downing, and J Barnett Calcification of Animal Tissue R Robinson Calcification of Normal and Abnormal Animal Tissue M H Salaman Absorption Experiments with Elementary Bodies P A Gorer Antigenic Basis of Tumour Transplantation

THURSDAY

Dermatology 5 P.M (Cases at 4 P M) Dr W N Goldsmith 1 Scleroderma Dr R E A Price (for Dr W J O Donovan) 2 Black Hairy Tongue.

Neurology 8 P M (National Hospital Queen square W C) clinical meeting

FRIDAY

Physical Medicine 5 P M Dr C W Buckley and Dr J G Thomson Indications for Treatment by Radioactive Waters in Great Britain Prof Sidney Russ and Dr Frank Howitt will also speak

Obstetrics and Gynæcology 8 P.M Mr Chassar Moir A New Type of Apparatus for the Self administration of Nitrous oxide Gas during Labour Mr Everard Williams A Modification in Technique of the Gray Ward Operation for Prolapse Mr J St George Wilson The Transposition (Interposition) Operation (Illustrated by film) Miss Grace Jones Retinal Changes in Late Pregnancy

Radiology 8 30 P M Dr R L Rawlinson Dr A Maitland Jones Dr C G Teall and Dr Peter Kerley Respiratory Diseases in Children

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE Manson House 26 Portland place W

THURSDAY Feb 18th —8 15 P.M Dr Philip Manson Bahr and Lt -Col A. G Biggam Sigmoidoscopy in Tropical Practice

ROYAL MEDICO PSYCHOLOGICAL ASSOCIATION
WEDNESDAY, Feb 17th —2 30 P.M, Prof A Meyer Recent Work on the Histopathology of Mental Deficiency

MEDICAL SOCIETY OF LONDON 11 Chandos-street W
MONDAY Feb 15th —9 P.M Sir Thomas Dunhill Surgery of the Thyroid Gland (First Lettsomian lecture.)

TUBERCULOSIS ASSOCIATION
FRIDAY Feb 19th 5 15 P.M. (Manson House, 20 Portland place W), Dr W J Fenton and Dr E H Hudson Simple Pleural Effusions 8 30 P.M Dr Otto May Life Insurance and Tuberculosis.

BRITISH ASSOCIATION OF RADIOLOGISTS.
FRIDAY Feb 19th —5 30 P.M (1, Wimpole-street) Dr E Lysholm Radiological Possibilities of Demonstrating the Exact Location and Pathology of Intracranial Expansive Processes.

SOCIETY OF MEDICAL OFFICERS OF HEALTH 1 Thornhaugh-street, W C
FRIDAY, Feb 19th —5 P.M Sir Francis Fremantle Reform of the Medical Curriculum.
Maternity and Child Welfare Group —5 30 P.M Dr Peter McKinlay: The Economics of Child Welfare Work.

CHELSEA CLINICAL SOCIETY
TUESDAY Feb 16th —8.30 P.M (Hotel Rembrandt Thurloe-place, S.W), Sir Harold Gillies: Plastic Surgery

BRITISH INSTITUTE OF RADIOLOGY 32 Welbeck street W
THURSDAY Feb 18th —8.30 P.M., Dr J R Wylie: Evidence of Healing Peptic Ulcers

SOCIETY OF RADIOTHERAPISTS
FRIDAY Feb 19th —5 P.M. (11 Chandos-street, W) Miss Constance Wood, Mr Reid Mr Grimmet Dr Clarke, and Dr Robb Measurement of Tumour Dosage

LECTURES, ADDRESSES DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS Pall Mall East S W
THURSDAY Feb 18th —5 P.M Dr I M D Arcy Hart Measures for the Prevention of Pulmonary Tuberculosis among Adults in England in the Past and in the Future (First Milroy lecture)

ROYAL COLLEGE OF SURGEONS, Lincoln s Inn Fields W C
MONDAY Feb 15th —1 P.M, Prof G E Gask: John Hunter in the Campaign in Portugal 1762–63

BRITISH POSTGRADUATE MEDICAL SCHOOL Ducane road W
MONDAY Feb 15th —2 30 P.M Dr H MacLean Nephritis and Allied Conditions
TUESDAY —2 P.M Dr Janet Vaughan Pregnancy Diagnosis
WEDNESDAY —Noon clinical and pathological conference (medical) 2 30 P.M., clinical and pathological conference (surgical). 4 30 P.M., Mr A S Parkes F R.S Experimental Endocrinology
THURSDAY —Noon, clinical and pathological conference (obstetrics and gynæcology) 2.30 P.M, Dr Duncan White Radiological Demonstration 3.30 P.M Mr A K Henry Demonstrations on the Cadaver of Surgical Exposures. 3 30 P.M Prof E C Dodds The Female Sex Hormones
FRIDAY —2 P.M operative obstetrics 2 30 P.M, Prof Hey Groves Fractures. 3 P.M department of gynæcology pathological demonstration
Daily 10 A.M to 1 P.M medical clinics surgical clinics and operations obstetrical and gynæcological clinics or operation

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE Hammersmith, W
MONDAY, Feb 15th —10 A.M skin clinic. 11 A.M., surgical wards P.M., surgical and gynæcological wards eye and gynæcological clinics.
TUESDAY —10 A.M medical wards 11 A.M surgical ward 2 P.M throat clinic 4 15 P.M. Dr Maurice Shaw The Hollow Viscera and their Symptoms
WEDNESDAY —10 A.M children s wards and clinic 11 A.M medical wards 2 P.M, eye clinic gynæcological operations. 4 15 P.M Mr Steadman: Pyorrhœa Alveolaris
THURSDAY —10 A.M neurological and gynæcological clinics Noon fracture clinic P.M eye and genito-urinary clinics 4 15 P.M Mr Sangster Simmonds: Diseases of the Alimentary Tract
FRIDAY —10 A.M medical wards skin clinic Noon lecture on treatment P.M throat clinic. 4 15 P.M., Dr Sydney Owen: Meningitis
SATURDAY —Children s and surgical clinics 11 A.M medical ward
The lectures at 4 15 P.M are open to all medical practitioners without fee
Daily 2 P.M, operations medical and surgical clinics

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION 1 Wimpole-street W
MONDAY Feb. 15th to SATURDAY, Feb 20th —ST JOHN'S HOSPITAL, Leicester-square W C. afternoon course in dermatology (open to non members) —NATIONAL TEMPERANCE HOSPITAL, Hampstead road N W, Tues 8 30 P.M Mr A Dickson Wright: Neck Thurs., 8 30 P.M Mr R J McNeill Love: Skull and Brain —CHELSEA HOSPITAL FOR WOMEN, Arthur-street S W all-day course in gynæcology —NATIONAL TEMPERANCE HOSPITAL, Hampstead road N W, Tues and Thurs 8 P.M M R C P clinical and pathological course —PRINCESS ELIZABETH OF YORK HOSPITAL, Shadwell, E., Sat and Sun., course in children s diseases —Courses are open only to members of the Fellowship

LONDON SCHOOL OF DERMATOLOGY 5 Lisle-street W C.
TUESDAY Feb 16th —5 P.M Dr H Corsi Diseases of the Nails
WEDNESDAY —5 P.M, Dr I Muende Histopathology of Some Common Skin Diseases

HOSPITAL FOR SICK CHILDREN Great Ormond-street W C.
THURSDAY Feb 18th — P.M., Mr Denis Browne Pregnyl or Operation for Undescended Testis? 3 P.M Dr Wilfrid Sheldon The Treatment of Rheumatic Conditions.
Out patient clinics daily at 10 A.M and ward visits at 2 P.M

NATIONAL HOSPITAL Queen-square W C
MONDAY Feb 15th —3.30 P.M. Dr Symonds Cerebral Tumours (III)
TUESDAY —3.30 P.M Dr Carmichael Polyneuritis
WEDNESDAY —3.30 P.M., Dr Kinnier Wilson Clinical Demonstration
THURSDAY —3.30 P.M Dr Carmichael Subacute Combined Degeneration of the Cord
FRIDAY —3.30 P.M Dr Denny Brown The Motor Cortex
Out patient clinic daily at 2 P.M.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART Westmoreland-street, W
TUESDAY Feb 16th —5 30 P.M., Dr John Parkinson Radiology of the Aorta

CENTRAL LONDON THROAT NOSE AND EAR HOSPITAL Gray's Inn road W C
FRIDAY, Feb 19th —4 P.M Mr C Gill-Carey Simple and Malignant Growths of the Larynx.

HAMPSTEAD GENERAL AND NORTH WEST LONDON HOSPITAL N W
WEDNESDAY Feb 17th —4 P.M Dr H M Oddy: The Significance of Cough in Children

ST. JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE, Ranelagh road S W
FRIDAY Feb 19th —4.30 P.M., Dr Albert Eidinow The Technique of Treatment by Local and General Ultraviolet Irradiation of the Skin in the Rheumatic Diseases

SOUTH WEST LONDON POST-GRADUATE ASSOCIATION St. James Hospital, Ouseley road S W
WEDNESDAY Feb 17th —4 P.M Mr Rainsford Mowlem: Some Common Cases Treated by Plastic Surgery

LEEDS GENERAL INFIRMARY
TUESDAY Feb 16th —3 30 P.M Mr A. Gough Diagnosis of Pregnancy

ANCOATS HOSPITAL Manchester
THURSDAY Feb 18th —4 15 P.M, Dr Langley Diagnosis and Treatment of Diabetic Coma

ST MARY'S HOSPITALS Manchester
THURSDAY Feb 18th (Whitworth-street West Hospital) 4 15 P.M Dr R. Newton Breech Delivery (With film)

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION
WEDNESDAY Feb 1 th —4 15 P.M (Western Infirmary) Dr Allison D McLachlan: Seborrhœic Dermatitis

Appointments

CARSE, JOSHUA, M D Durh., D.P.M has been appointed Assistant Hon Physician in charge of Out patient Clinic for the Treatment of Early Mental Diseases at the Northampton General Hospital

DOBBS R H., M B Camb M R.C.P Lond., Hon Assistant Physician to the Princess Louise Kensington Hospital for Children

FRANKLIN A W M B Camb, M.R.C.P Lond Assistant to the Pædiatrician and Medical Officer to the Infant Consultation Centre at Queen Charlotte s Maternity Hospital

HAWKSLEY, J C M D M R C P Lond Hon Physician to St. Peter's Hospital, London

HENNELLY, T J., M D N U I D P.M Medical Superintendent Cardiff City Mental Hospital

HUTTON, H G, B.A Camb., M R.C.S Eng., Assistant School Medical Officer for Leeds

McGOURTY H D M B Dub., D.P H Assistant Tuberculosis Officer at Winter street Hospital Sheffield

MACNAB, G H M.B Edin., F R.C.S Eng Assistant Surgeon to the Westminster Hospital

ORLEBAR Doris M M.A. Oxon., M R C S Eng D P.M Hon Psychotherapist to the Out patient Department of the West End Hospital for Nervous Diseases, London

PEARCE J D W M D M R C P Edin D P.M., Hon. Psychotherapist to the Out patient Department of the West End Hospital for Nervous Diseases, London

RATNER, EDWIN M D Manch, D P H Consultant Tuberculosis Officer to the West Riding County Council

ROBERTS G J., M D Edin, D P H, Assistant Medical Officer of Health and Assistant School Medical Officer for Bootle

ROWLEY, G D M B Edin, Senior Resident Medical Officer at the Hospital for Sick Children, Newcastle-upon Tyne

SHUCKSMITH H S M B., F R C S Eng Resident Surgical Officer at the General Infirmary Leeds

TILL, A S F R C S Eng., Surgical Registrar at the Middlesex Hospital

VAUGHAN JACKSON O J, B M Oxon., F R.C S Eng Surgical First Assistant and Registrar at the London Hospital

Certifying Surgeon under the Factory and Workshop Act
Dr H O Mount Jones (Llangollen District, Denbigh); Dr W L Anderson (Dunbar District East Lothian)

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Infirmary—Hon Asst Physician

Accrington Victoria Hosp—H S £150

All Saints Hosp, Austral street, West square S E—Res H S at rate of £100

Baghdad Royal College of Medicine—Prof of Pathology, £150 per mensem

Belfast Queen s University—Musgrave Professorship of Pathology £1000

Birmingham Dudley road Hosp—Jun M O at rate of £200

Birmingham Romsley Hill Sanatorium—Res Asst M O, at rate of £240

Birmingham St Chad's Hosp—Jun Res M O at rate of £150

Bootle County Borough—Deputy M O H and Deputy School M O £700

Bradford Royal Eye and Ear Hosp—H S £160

Bradford Royal Infirmary—H S at rate of £150

Bradford, St Luke s Municipal General Hosp—H P s and H.S s each at rate of £150

Brighton Royal Sussex County Hosp—Hon Med Registrar Also Cas H S £120

Brighton Sanatorium and Infectious Disease Hosp—Jun Res M O at rate of £250

Brighton, Sussex Maternity and Women s Hosp—Res H S £130

Bristol Eye Hosp—Hon Asst Ophth Surgeon Also Jun H S at rate of £100

British College of Obstetricians and Gynæcologists 58, Queen Anne street W—Res Librarian £400

Burton-on Trent General Infirmary—H P and Cas O £150

Cambridge Addenbrooke s Hosp—H S at rate of £130

Cardiff Prince of Wales Orthopædic Hosp—H S for County Branch at rate of £200

Central London Ophthalmic Hosp Judd street W C—Sen and Jun H S s £120 and £100 respectively Also Out patient Officer £50

Chester Royal Infirmary—Two H.S s, H.S and H P, each £150

Derby Bretby Hall Orthopædic Hosp—Jun Res Asst M O £350

Derby Derbyshire Royal Infirmary—H.S Also Cas O and Orthopædic H S each £150

Derbyshire Education Committee—Asst School M.O £500

East Ham Memorial Hosp Shrewsbury road E—Physician for Skin Dept

East Sussex County Mental Hosp Hellingly—Sen Asst M O £550

Edinburgh Royal College of Physicians—Kirk Duncanson Fellowship for Medical Research £300

Glasgow Western Infirmary—Asst Radium Therapist £300

Hertford Ware Park Sanatorium—Asst M O £300

Home Office, Children s Branch—Medical Inspector £738

Huddersfield County Borough—Asst School M O £500

Huddersfield Royal Infirmary—H P and Res Anæsthetist, at rate of £150

Hull City Mental Hosp, Willerby—Asst M O £500

Hull Royal Infirmary—First H P at rate of £175 Also second H P and H S to Ophthalmic and Ear Nose and Throat Depts each at rate of £150

Jerusalem and the East Mission 12 Warwick square S W—Asst Res M O £160

Jewish Maternity Hosp, Underwood street E 2—Asst Anæsthetists

Leeds Maternity Hosp and the Hosp for Women—Joint Pathologist £600

Leeds, Menston Mental Hosp—Asst M O £350

Leicester Royal Infirmary—Res Anæsthetists at rate of £150 H S s, Cas O s and H P s at rate of £125 Also Jun Cas O £100

Liverpool City—Asst M O £500

Liverpool Royal Babies Hosp Woolton—Res M O £125—£150

Liverpool Royal Southern Hosp—Hon Asst Orthopædic Surgeon

L C C—Asst M O s Grade II, £250

London Hosp E—Paterson Research Scholar and Chief Asst for Cardiac Dept. £400 Also 1st Asst to Thoracic Surgery Dept

Macclesfield General Infirmary—Sen H S at rate of £180

Manchester Ancoats Hosp—H S at rate of £100

Manchester Duchess of York Hosp for Babies—Sen and Jun Res M O s at rate of £125 and £75 respectively

Manchester Royal Children s Hospital Pendlebury—Asst M O for Out Patients Dept at rate of £150

Mildmay Mission Hosp Austin street Bethnal Green E—Jun Res M O at rate of £100

Miller General Hospital Greenwich road S E—H S and Cas O at rate of £100 and £150 respectively

National Dental Hosp University College Hosp W C—Hon Asst Anæsthetist

Nelson Hosp Merton S W—Res H S, at rate of £100

Newcastle upon Tyne Eye Hosp—Sen H S £300

Newcastle upon Tyne Royal Victoria Hosp—Med Reg £250 Also Morning List Anæsthetist 25s per session

Newcastle-on Tyne Wooley Sanatorium near Hexham—Asst M O £350

Northampton Mental Hosp Berrywood—Third Asst M O, £450

Norwich Norfolk and Norwich Hosp—H S to Spec Depts £120

Nottingham and Midland Eye Infirmary—Res H S £200

Plymouth Prince of Wales s Hosp Devonport—Sen H S at rate of £130

Plymouth Prince of Wales s Hosp Greenbank road—H P and H.S each at rate of £120

Poplar Hosp for Accidents East India Dock road E—Res M O at rate of £175

Preston and County of Lancaster Royal Infirmary—H P at rat of £150

Preston Biddulph Grange Orthopædic Hosp—Jun H S at rat of £200

Princess Beatrice Hosp Earl's Court S W—Res Surg O a rate of £200 H P and Cas O at rate of £110 Also Cas and Obstet H.S at rate of £110

Princess Louise Kensington Hosp for Children St Quintin avenue, W—H P, at rate of £120–£150 Also Part tim Registrar £100

Prince of Wales s General Hosp, N—Jun H P and two Jun H.S s each at rate of £90

Queen Mary's Hosp for the East End, E—Hon Asst Physicia to Psychological Medicine Dept

Reading Royal Berkshire Hosp—Res Anæsthetist £250

Rochdale Birch Hill Hosp—Jun Res M O at rate of £225

Rochdale Infirmary and Dispensary—Sen H S, £250 Als Second H S and H P, each £150

Romford Oldchurch Hosp—Jun Res M O, £250

Rotherham Hosp—Sen H.S or Physician £200 H P, £180 Also Cas H S £150

Royal Air Force Medical Service—Commissions

Royal Eye Hosp St George s-circus S E—Sen H S Also tw Asst Surgeons at rate of £150 and £100 respectively

Royal Naval Medical Service—Vacancies for M O s

St Albans County Institution, Oster House—H.S at rate o £150

St George s Hosp, S W—Res M O for Convalescent Branch at rate of £300

Scarborough (New) Hosp—H P, at rate of £130

Sheffield, Jessop Hosp for Women—H.S at rate of £100

Smethwick, St Chad's Hosp—Res Obstet O, £350

Taunton and Somerset Hosp—H.S, at rate of £100

Truro Royal Cornwall Infirmary—H.S £170

West Ham County Borough—First Asst Res M O for Centra Home Leytonstone £525

West London Hosp Hammersmith W—Asst Pathologist £300

Westminster Hosp Broad Sanctuary S W—Surg Reg £250

Woolwich and District War Memorial Hosp Shooters Hill S.E—Res M O £175 Also H S at rate of £100

Worcester County and City Mental Hosp Powick—Asst M O. £350

Medical Referee under the Workmen s Compensation Act 1925 for the Boston Holbeach Sleaford, Spalding Spilsby an Skegness County Court Districts (Circuit No 17) Applica tions should be addressed the Private Secretary Hom Office Whitehall London S W 1 before March 1st

The Chief Inspector of Factories announces vacancies fo Certifying Factory Surgeons at Bungay (Suffolk) an Tarvin (Cheshire)

Births, Marriages, and Deaths

BIRTHS

BURTON —On Feb 3rd at Mbale Uganda the wife of Dr Edward Burton Colonial Medical Service of a daughter

CAROTHERS —On Jan 31st at Nairobi to the wife of Dr Colin Carothers—a daughter

CULLINAN —On Feb 3rd the wife of Dr E R Cullinan Park square West of a daughter

PHILLIPS —On Feb 2nd the wife of Mr Ralph Phillips F R C S. of Highgate of a son

MARRIAGES

HOLMES—BOSTOCK —On Feb 2nd at Baswich, John MacDonald Holmes, to Molly only daughter of Mr H J Bostock of Stafford

DEATHS

BRADLEY —On Feb 2nd at Lutterworth, George Francis Bradley M B Lond

HEWSON —On Feb 3rd from pneumonia, R W Dale Hewson L R C P & S Edin Capt late R A M C Medical Superintendent of the Lunatic Asylum Kingston Jamaica son of the late Dr R W Hewson Stafford

LEWIS —On Feb 6th at Birmingham, Charles James Lewis M D Edin F R C P D Sc Emeritus Professor of Public Health at Birmingham University, formerly of Stirling and Edinburgh

MEYRICK JONES —On Feb 2nd Hugh Meyrick Meyrick Jones, M D Durh M A (Hon) Cantab of Hauxton

PAGET TOMLINSON —On Feb 8th at Kirkby Lonsdale William Smith Paget Tomlinson M D Lond F R C P Lond in his 89th year

PROFEIT —On Feb 5th at Pitt street Kensington Col. Charles William Profeit C S I C M G, D S O M B Aberd late Army Medical Service

SAUNDERS —On Feb 4th in Vancouver B C of pneumonia Monica Lucy Mary Saunders M B B S Durh wife of Dr T F Saunders of Vancouver

N B —A fee of 7s 6d is charged for the insertion of Notices of Births Marriages and Deaths

NOTES, COMMENTS, AND ABSTRACTS

THE INTESTINAL FLORA AND ITS RÔLE IN THE LIFE OF MAN AND THE HIGHER ANIMALS *

By P Kouchakoff
OF THE INSTITUT DE CHIMIE CLINIQUE LAUSANNE

The rôle and significance of the intestinal flora in the processes of digestion have not yet been sufficiently elucidated. As is known there are two groups of microbes microbes of fermentation and microbes of putrefaction In new born animals the intestine is always sterile the microbes making their appearance during the first hours of life In the tropical fruit bats known as flying foxes the alimentary tract is almost sterile My own observations in the north polar regions conducted in the course of six years in Northern Siberia Nova Zembla and in Franz Josef Land have shown that the intestine of polar bears contains only one kind of microbe —*Bacillus coli*—belonging to the fermentative group (over 100 observations) whereas in sea gulls and migratory birds I found a considerable and varied intestinal flora. On the other hand in the local polar birds the flora became progressively poorer as one approached the North Pole For example in the genus uria (auks) the intestine was found to be perfectly sterile (more than 300 observations)

Thus in some animals the entire process of digestion and assimilation is purely physiological, without any intervention on the part of the microbes It is also well known that all experiments on feeding new born animals with sterile food and in sterile surroundings rapidly leads to their death. My own experiments with new born polar bear cubs kept together with dogs demonstrated that these animals are not immune against the putrefactive microbes and that invasion of the intestine by microbes of this group makes them ill and sometimes kills them (three out of eight died). Uninterrupted observations in the course of two years demonstrated that in bear cubs fed on a human diet and having an abundant intestinal flora growth and general development were retarded as compared with wild cubs of the same age, although the animals lived in complete freedom under identical polar conditions

It will be noted that the facts mentioned above are contradictory since on the one hand under existing conditions of nutrition the absence of an intestinal flora is fatal to the animal while on the other hand the appearance of an abundant intestinal flora likewise causes their death.

It has been proved that between the two groups of microbes—the fermentative and the putrefactive—there is a constant antagonism and that the saprophytic intestinal microbes may in certain cases become pathogenic and not only cause diseases in various organs but bring about different kinds of septicæmia

If the intestinal flora is necessary for the *proper* nutrition of the animal and for the assimilation of the food it is difficult to understand the existence in the general harmony of the organism of this antagonism between the different species of microbes It is equally incomprehensible that these microbes while breaking up the foodstuffs biologically produce by means of their by products intoxication of the organism which they are supposed to assist. In a series of investigations I have shown that the solution of these questions lies in the proper nutrition of the body

Virchow's recognition of alimentary leucocytosis —the name given by him to the increase in the number of leucocytes occurring after each meal—as a physiological phenomenon represents one of the greatest scientific errors as the result of which the works of all subsequent investigators were based on false premises My own experiments have shown that alimentary leucocytosis does not take place after consumption of food in the form in which it was produced in nature but that leucocytosis occurs after consumption of food altered by high temperatures and by complicated manufacture The alimentary leucocytosis is an indication of some pathological process taking place in the organism as the result of the introduction of food which is not readily assimilable. If the altered natural products of our usual diet are combined with small amounts of raw products the leucocyte formula of the blood can be maintained at its normal physiological level and I have succeeded in determining the necessary *proportions.*†

In order to determine the true significance of the intestinal flora and of its rôle in the digestive processes further experiments should be conducted on animals and human beings fed on a diet which causes no changes in the leucocyte formula of the blood but maintains it on the same physiological level.

INCIDENCE OF SYPHILIS A CORRECTION

In a leading article on Jan. 2nd we referred to the report of a New York commission appointed to study methods of control of venereal disease in the Scandinavian countries and in Great Britain. The figures studied and recorded in this report showed evidence of decline in the incidence of syphilis in all the countries concerned; and it was noted that in 1933 the reported cases reached the low level of 7 per 100 000 in Sweden 20 in Denmark, and 30 in Oslo the chief city of Norway We compared these figures with the number of new cases of syphilis reported as having attended treatment centres in this country during that year, amounting to 21 525 —an incidence of 56 per 100,000 in a population of 38 000 000 It seems that there was no real basis for comparison between these sets of figures, since the Scandinavian reports referred *to fresh cases* of early syphilis attending for treatment for the first time whereas our figure of 21,525 included cases of old-standing syphilis as well as recent infections and also a certain number of duplicates—that is to say patients who were transferred from centre to centre and were recorded as new cases at both Another source of error was the fact that the population of England and Wales during 1933 exceeded 40 000 000 The number of cases in which the infection was of less than one year's duration amounted to 8000 and it is this figure which is most nearly comparable with the figures for the Scandinavian countries. By this standard the incidence is approximately 20 cases per 100 000 in a population of 40 000 000 and the comparison makes it clear that methods of control here are more effective than we indicated Nevertheless, it must be remembered that the figures from treatment centres in this country give only a propor tion of the total incidence of the disease, since there is no system of compulsory notification as in Scandinavia, where—in Sweden and Denmark at all events—it is believed that the reporting of cases is faithfully carried out by practitioners It is interesting to note that the annual report of the chief medical officer of the Ministry of Health for 1935 records a still further decline in the incidence of syphilis in this country, the total cases falling to 19,335, of which 5971 were regarded as fresh infections This is the lowest figure yet recorded An instructive map reproduced opposite p 94 of the chief medical officer's report shows increases or decreases for the various counties

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* Summary of a paper read before the International Congress of Microbiology London 1936

† See the proceedings of the first International Congress of Microbiology in Paris 1930 and of the International Physiological Congress in Rome 193[illegible]

PROF YAS KUNO

HOWEVER important his researches and however valuable his contribution to the welfare of humanity in general, no one experiences the fullest satisfaction with his work unless he has stimulated some of those around him to follow in his footsteps The history of medicine abounds with examples of men who have gathered round them a group of younger workers and filled them not only with their own enthusiasm but with an intense and often touching loyalty In 1934 Prof Yas Kuno of the Manchuria Medical College, Mukden, published in book form an account of the physiology of human perspiration, the most complete account in existence and yet little more than a record of the researches of his own school into this neglected subject Now on his retirement from the chair he has held for 25 years his former pupils have demonstrated their affection and regard in a way that any teacher would be proud of The whole of the December number of the *Journal of Oriental Medicine* is taken up by their writings, dedicated to him "in humble recognition of his devoted guidance" We congratulate Prof Kuno not only on his own contributions to medical science but on the happy relations he has enjoyed with his disciples, as they call themselves With them, we hope that he may long be spared to 'devote his life to the benefit of the medical world and of humanity at large," and it is good to know that he will have a new laboratory in which to pursue these ends

THE FATE OF THE SPLENECTOMISED

DOES a man surgically deprived of his spleen live happy ever after? Is he more blessed or less so than his neighbour still in possession of that somewhat mysterious organ? Erik Ask-Upmark of Lund has collected 94 cases from writings on the subject and has also followed up 100 cases of splenectomy done in Sweden (*Acta med scand* Suppl lxxviii, p 226) A small control group of 10 cases was examined at the Medical Clinic at Lund but the remaining 90 were investigated by means of a questionnaire sent through the post More than half the patients were under 21 and the average post-operative period at the time of observation was 8 years About half the patients reported that they had had good health since the operation the remainder having suffered from various disorders the most important of which was tuberculosis Although the morbidity-rate was not striking the mortality-rate from tuberculosis in these patients was high both in the cases followed up and in the cases collected from the writings—a result which supports the view that the spleen may exert a *protective function against tuberculosis* The incidence of appendicitis also seemed higher than might have been expected Lassitude was a symptom commonly observed at any rate in the first year after operation, and sometimes it persisted indefinitely, in some cases also remarkable alterations in body weight both in an upward and downward direction, were noted Ask-Upmark concludes that allowing not less than a year for his body to accustom itself to the loss of the spleen a splenectomised person should be regarded as at least a fairly good insurance risk.

NEW PREPARATIONS

TANNOL is an emulsion of acriflavine in paraffin with 10 per cent of tannic acid Acriflavine emulsion has been strongly recommended as a first-aid antiseptic dressing for burns and scalds, and the intention here is to combine its virtues with those of tannic acid. The Tannol is to be applied on lint under a light bandage, and the dressing may be renewed if necessary twice a day It is made by Clay and Abraham Ltd of Liverpool

TESTOVIRON is the name under which Schering Ltd (185, High Holborn, London, W C 1) issue their crystalline preparation of testosterone propionate Testosterone is the testicular hormone, and the propionic acid ester is the most active compound of it so far available Clinical experience with it is scanty, but the manufacturers believe it to be useful at the male climacteric, in conditions of sexual deficiency (e g, hypogonadism and some types of sterility), in cases of early prostatic hypertrophy, and for various other disorders

ANTIHÆSIN is described as "a non irritant, non inflammable solution for the painless removal of plaster strapping" A little of it is insinuated between plaster and skin, or the whole surface may be soaked if need be, after which the plaster strapping can be removed smoothly and evenly It is manufactured in England by Allen and Hanburys, Ltd, London, E 2

SYRUP AMMONII MANDELAT—Mandelic acid is bactericidal only in an acid medium, and when sodium mandelate is used against urinary infections ammonium chloride is given at the same time to ensure acidity of the urine If ammonium mandelate is employed the addition of ammonium chloride is usually unnecessary, and C J Hewlett and Son Ltd (35, Charlotte-street, E C 2) put forward their new syrup as a convenient and pleasant means of carrying out mandelic acid therapy Two teaspoonfuls contain 3 0 grammes of the acid

STREPTOCIDE—On Dec 5th last we mentioned that Evans Sons Lescher and Webb Ltd were issuing *p* aminobenzenesulphonamide to practitioners, free of charge Their preparation of this substance is now on the market under the name of Streptocide

"TABLOID" BRAND SULPHONAMIDE P is the shorter name by which Burroughs Wellcome and Co (Snow hill Buildings, E C 1) now describe *p*-aminobenzenesulphonamide They suggest that intramuscular injection may be tried when it cannot be given by mouth, and they offer suggestions for preparing a suitable solution

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The GLAXO LABORATORIES LTD (Greenford, Middlesex) have produced "The Ostermilk Book" on the care of mother and baby It is in three parts (Before Baby Comes The First Year and the Toddler) and it contains useful information and sensible advice in simple form Naturally enough, the supplementary foods and preparations recommended are those of the Glaxo firm

From CADBURY BROS, LTD, of Bournville, comes "The Cacao Tree," which describes their products in terms of medical practice It begins with an apocryphal old song "The Milk, the Malt, and the Chocolate Tree, the more you eat 'em the better you be," and it ends with reasons for acting on this advice by taking Bourn-vita Emphasis is laid throughout on the advantages of chocolate beverages for people who are nervous or irritable, as alternatives to those containing caffeine

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AN UNUSUAL STRIKE—The current issue of the *Münchener Medizinische Wochenschrift* relates on the authority of Reuter a strike for higher wages in a big London hospital Out of sympathy for the strikers all the 850 patients in the hospital refused food and medicine and the management was obliged to make terms with the strikers The hospital is not named

ADDRESSES AND ORIGINAL ARTICLES

RITUAL PURGATION IN MODERN MEDICINE *

By L J Witts M.D Manch F R C P Lond

PROFESSOR OF MEDICINE IN THE UNIVERSITY OF LONDON AND DIRECTOR OF MEDICAL UNIT ST BARTHOLOMEW'S HOSPITAL

> I would not have you take too much Phisick, for it doth all waies make me worse and I think it will do the like with you "
>
> Charles II

Purgation like emesis fasting bleeding and other methods of depletion has been used from the dawn of history in the effort to relieve physical illness and mental distress Purgation calendars indicating the times and constellations when these offices should be performed were the first printed documents of medicine Much of the purging carried out by medical men to-day is rooted in archaic and primitive beliefs rather than physiology and pathology There are profound sources for these beliefs with which a cursory study of Freudian psychology will acquaint you. Suffice it to say that the pleasure felt by the infant in the discharge of bodily functions and the pain caused by the need to discipline them play an important part in the mental development of mankind Little children are told that they are good when they evacuate to order and the idea that an action of the bowels is something meritorious and certain of reward lingers in many adult minds You may phrase these beliefs anew and speak of increasing the excretions flushing out toxins, or preventing auto intoxication but whenever you are tempted to purge a patient who has a fever or who is to face the ordeal of a surgical operation I ask you to pause and consider whether you are not exchanging the laboratory jacket of the twentieth century for the panoply of the witch doctor and the exorciser

As recently as 1918 Lane attributed to intestinal stasis loss of the feminine contours, low blood pressure high blood pressure asthma, neuritis depression melancholia mastitis cancer tuberculosis, rheumatism goitre flat feet foul breath offensive perspiration and discoloration of the skin All these maladies were to be prevented or relieved by the more frequent action of the bowel Was there ever a more fantastic statement of the rewards of being good ? Later focal sepsis replaced constipation as the bogy and organs such as teeth tonsils appendix, gall bladder uterus, and prostate were sacrificed on the altar of health The excesses committed in the elimination of intestinal toxæmia and focal sepsis show that ideas derived from religion and magic are still at work in Western medicine and that men are still ready to put their trust in purification and blood sacrifices in their time of trouble My purpose in this lecture is to suggest that much of the purgation of sick people carried on to-day is harmful and only to be explained by thoughtless adherence to tradition The evil effects of constipation have been exaggerated few if any of the] symptoms of acute illnesses can be attributed to constipation or relieved by emptying the bowel and many of them are much aggravated by purgation

Bowel Physiology

In certain people especially patients interest in the products of the large intestine can only be described as morbid and excessive Students and many doctors on the other hand, are too ready to accept at their face value the noughts and crosses which the nursing staff inscribe on the temperature charts, without realising that a cross may mean anything from a little damp flatus to the voluminous evacuation of sprue If our attitude to the action of the bowels is to be rational, we must observe the number size and consistency of the stools the state of the rectum, the method of administration and the volume of enemata and the dosage and effect of purgative drugs with the same care as every other detail of investigation and treatment and not delegate these matters to the nursing staff In health the bowels are opened once or twice a day according to diet and habit This rhythm is easily disturbed in sickness not always unavoidably Too often patients in hospital are kept in bed because there is inadequate accommodation for them to be up rather than because their disease requires it Whenever possible the doctor should encourage them to get up for breakfast and the toilet instead of inhibiting the delicately conditioned reflex of defæcation by a bed pan If a patient misses a daily action in his new surroundings it is important to avoid a panic flight to purgatives which will injure the normal rhythm much more than a single day's omission. Some patients undoubtedly are helped by a mild aperient but one should stop the practice prevalent in many wards in which a Borgia like sister makes an evening round and administers a powerful cathartic to any patient who is considered not to have done his duty If a patient is too ill to get up to use the toilet, then he is possibly too ill to tolerate a purgative and every such patient should be considered as an individual and not submitted to routine purgation.

A formed stool consists of unabsorbed food debris and the bodies of dead bacteria The longer it is retained in the distal colon the more inert it becomes Aperients, by hurrying undigested residues through the proximal colon and making them more watery increase the number of viable bacteria in the stool. It is an old observation that relapses can be provoked in *Bacillus coli* pyelitis by giving an aperient Apart from mechanical distension a constipated stool exerts little more influence on the patient in the colon than in the bed pan The ill effects of constipation, as of masturbation are almost entirely psychogenic and due to worry over disturbance of habit. Boys with megacolon and prolonged retention of fæces show little evidence of toxæmia As I shall indicate later I have deliberately kept ill people constipated for a week or longer without any symptoms from the bowel Some inspissation of fæces may occur especially in old people with the formation of a rectal plug which requires assistance in dislodgement but that is the only difficulty The small intestine empties itself as completely as possible 14 hours after food and no purgative can make it any cleaner The whole of the large intestine is accessible to lavage from the rectum There is rarely any urgency for the bowels to be opened in acute illnesses and when an action becomes desirable it should be secured by enemata and not by drugs

Ill Effects of Purgation

Is there any harm in purgation ? In patients who are acutely ill it may be a most dangerous expedient Physiology has long emphasised the importance of a constant internal environment for the organism, but it is only in recent years that medicine has realised the profound effect which increase in the secretions and excretions may have on that inner environment A man may go without food for many days, but the deprivation of water or loss of the soluble salts of the organism is badly borne The osmotic equilibrium between the cells and the body fluids is disturbed, the volume of blood is diminished, the circulation collapses, the renal function is impaired, the acid-base metabolism undergoes fluctuations which are beyond the bounds of compensation

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* An address given to the Manchester Medical Students Society on Jan 29th 1937

The output of water is normally concerned with the excretion of waste materials in solution by the kidney and in semi solid form by the bowel, and the dissipation of body heat by vaporisation from the skin and lungs Excretion of water by the kidneys and the bowel may be greatly curtailed in emergency, and this is the chief reason for the concentrated urine and the constipation of fever Vaporisation by the skin must continue as long as life is to be maintained and, when the temperature is raised, several litres a day may be lost in this way Coller (1936) has calculated that by the time a patient begins to show signs of dehydration, such as a dry hot skin, a dry tongue, sunken eyes, fever, and a low output of urine, there is a fluid deficit equal to about 6 per cent of the body weight or nearly four litres in the average adult The obvious need in such a case is to increase the fluid intake, by parenteral channels if necessary, until the signs of dehydration disappear and the urine volumes return to normal. In acute illnesses constipation is usually a symptom of dehydration, and to purge a dehydrated patient, depleting the fluid reserves still further, is always foolish and often disastrous Here are some examples from my own experience —

In Addison's disease the water balance is very unstable, owing probably to the loss of the suprarenal control of the excretion of sodium salts by the kidney Mrs A, aged 43, had been under treatment for Addison's disease for nine months As I wished to study her metabolism further, her Cortin was stopped for a few days on Nov 23rd, though salt by mouth was continued In order to obtain a good sample of fæces for analysis, the house physician gave her senna infusion on the evening of the 28th and again on the morning of the 29th Five stools were passed on the 29th and her temperature rose abruptly On the 30th it reached 106° F and she was semi conscious with rigid limbs She was terribly ill for over a week, but we gave her saline infusions and cortin in doses of 100 c cm daily and she eventually recovered I interpreted her illness as a crisis of suprarenal insufficiency with dehydration fever and muscle cramps provoked by a very moderate catharsis

A man of 52 who had had symptoms of duodenal ulcer since 1929 developed pyloric stenosis at the beginning of 1936 He had suffered from copious and projectile vomiting for two months before admission to the medical unit, and had been performing gastric lavage for one month His general condition appeared satisfactory, blood pressure 105/110, blood count normal blood urea 47 mg per 100 c.cm , alkali reserve 62 vols carbon dioxide per cent , plasma chlorides 577 mg per 100 c cm While, however, his best weight was 10 st 10 lb , his present weight was only 8 st 2 lb After further gastric lavage he was *transferred to the surgical unit for gastro-enterostomy* on the fifth day The operation went very smoothly, but on the fourth day after the operation, following an aperient, his bowels were opened four times On the fifth day his bowels were opened nine times and his general condition deteriorated rapidly The blood volume was diminished, as shown by the fact that the red cell count had risen to 6 8 millions per c mm The blood urea was 320 mg per 100 c cm Next morning the patient rather suddenly collapsed and became dyspnœic his extremities were blue and cold, his face shrunken, and his systolic blood pressure was below 60 mm Hg The blood urea had risen to 440 mg per 100 c cm , the plasma chlorides had fallen to 483 mg and the alkali reserve to 28 volumes per cent Efforts to restore the circulation were of no avail and the patient died a few hours later Although this man's blood count and blood chemistry were normal, his loss of approximately 25 per cent of his weight was associated with such a great diminution in the fluid and mineral reserves of the body that he was unable to cope with a moderate diarrhœa, and quickly succumbed to uræmia and acidosis

A man of 43 with bronchiectasis of the left lower lobe developed a massive pneumonia with high fever, which necessitated treatment in the oxygen tent from the 3rd to the 14th day His illness was punctuated by two attacks of diarrhœa, directly due to the giving of aperients on the 5th day, when he had five stools, and on the 9th day, when he had seven stools The difficulties of treating in an oxygen tent a delirious patient with diarrhœa can hardly be exaggerated

Purgation in Acute Disease

When these things occur in wards whose chiefs hold strong views about the risk of aperients in acute illness, one wonders what disasters occur elsewhere. Quite frankly, such accidents are usually due to allowing the administration of aperients to fall into the hands of the nursing staff I am well aware of the difficulties inherent in the relationship between an inexperienced house officer and an experienced ward sister But the house man should remember that experience does not always teach The nursing type of mind, being feminine, tends to be conservative , it holds fast to the orthodox and avoids experiment because of its dangers On the other hand, nurses are good observers, prepared to be persuaded by results, and with a little tact difficulties of this kind can usually be surmounted. An aperient is a drug A nurse may not administer a drug unless it has been ordered in writing The doctor who permits errors by ordering aperients *p r n* is himself directly responsible It must be admitted that text-books of medicine rarely emphasise these dangers and in some ways have hardly advanced from the old purgation calendars

In acute tonsillitis "an initial dose of calomel, 2 to 4 grains, should be administered and followed by a saline aperient " (Barwell 1933)

In cerebro spinal fever "it is frequently necessary to use purgatives If the patient is comatose early in the disease, when treatment is beginning, it may be *advisable to give 2 minims of croton oil* " (Horder 1933)

In pneumonia "it is important to get good action of the bowels in the early stage of the disease The large bowel should be completely emptied Later on, the less the patient is disturbed in any way the better" (Chandler 1936)

I am glad to be numbered amongst those who have never administered croton oil. The sense of these statements appears to be that one should only purge at the onset of a febrile illness, before the patient becomes dehydrated The following method of eliminating an imaginary toxin in eclampsia needs a good deal of stomaching —

"If we knew what the toxin was we might be able to *administer an antidote, but at present the* best we can do is to hasten its elimination from the system through the ordinary channels of excretion, viz., the bowels, the kidneys, and the skin The lower bowel should be cleared out as quickly as possible by large enemata and the irritating contents of the stomach should be washed out by the stomach tube Sulphate of magnesia jalap, or calomel in large doses should be given through the stomach tube when the washing out is finished or by mouth when the patient is conscious Large doses are necessary, as absorption seems to be in abeyance, nd what would actively purge the patient under ordinary onditions would hardly move her bowels in an eclamptic eizure (Jardine 1921)

In diabetic coma clear the bowels with an enema ut do not waste time on this in collapsed cases. Constipa on is usually extreme and a potent cause of toxæmia (Lawrence 1933)

The loaded bowel of diabetic coma has impressed many observers, but surely it is putting the cart before the horse to regard the constipation as a *cause* of toxæmia. It seems much more probable that the constipation is the *result* of toxæmia and deviation of water to the kidney Acidosis and alkalosis both cause dehydration It is interesting in this regard to note that alkalosis also is accompanied by constipation and that treatment of the constipation may make the alkalosis worse —

> In all cases the onset of symptoms was preceded by several days obstinate constipation Apart from any direct relationship there may be between constipation and *the onset of alkalosis* it is possible that there may be an important indirect connexion between the two The proportion of magnesium oxide or carbonate is often increased in cases of peptic ulcer as a convenient means of correcting constipation without incurring the disadvantages of more drastic purges—a practice which owing to the high alkalinity of these magnesium salts, may well determine the onset of alkalosis ' (Oakley 1935)

In the treatment of uræmia, purgation is no longer recommended Osman (1936) writes The fluid balance in the body and particularly the volume of urine excreted, should never be upset by the giving of purges and Sir W Langdon Brown tells me that in the next edition of Price s Medicine the use of purges in uræmia will no longer be recommended.

Pre operative Purgation

Surgical operations provide one of the best examples of an acute illness or emergency for which careful plans can be laid Surgeons have such a surfeit of physiology in the primary fellowship examination that they may be forgiven a revulsion from it afterwards Nevertheless physicians have much to learn from surgeons about the practical application of physiological principles in the prevention and treatment of dehydration My researches into the customs of my surgical colleagues have revealed a curious mixture of the medieval and the modern in the attention paid to the bowels in patients undergoing operative treatment —

> It is necessary to take an ounce of castor oil the night before tonsillectomy or similar operation on the nose and throat
>
> Patients with Graves s disease are no longer purged before thyroidectomy as they sometimes died of diarrhœa when this was done
>
> In other operations outside the abdomen aperients such as castor oil or senna and salts are given on the two nights before operation, and again 48 hours after operation and on each succeeding night
>
> If the operation is inside the abdomen but the stomach or bowel is not cut the same ritual is followed with the addition of an enema 12–36 hours after operation
>
> If the operation is on the stomach or duodenum there is no pre-operative drugging but an enema of 1 quart of plain water is given at least two hours before operation A simple enema is given 24–36 hours after operation and then daily for the first five days at any rate Sometimes liquid paraffin 2 drachms b d is given by mouth from the third day

I learn that in gastric surgery "the giving of cathartics is contra indicated because the effect of them is to dehydrate the patient irritate the colon and cause post-operative gaseous distension (Eusterman and Balfour 1935) I should have thought that what was bad for a duodenal ulcer was bad for a femoral hernia, but it appears that the surgeon like the physician, still purges any unfortunate patient who is robust enough to stand the strain Only when experience has shown that purgation may be lethal is the bitter cup withheld. Can we wonder that disturbances of bowel habit so often date from a surgical operation ? I take the following purgation calendar from the current practice of rectal surgery :—

> *If for operation on Monday :—*
>
> | | |
> |---|---|
> | Haustus sennæ co 1½ oz. | Thursday 6 P M. |
> | Haustus sennæ co 1½ oz. | Friday 6 p.m |
> | Ol ric 1½ oz. | Saturday 6 P.M. |
>
> Enema saponis Sunday morning and evening
>
> Enema saponis Sunday midnight s o.s and one or two as necessary Monday morning
>
> Patient is kept on fluids, jelly and custard all Sunday Haustus catechu co., 1 oz. to be given 6 A.M and 10 A.M Monday morning
>
> *Fluid diet after operation until bowels open*
>
> Liquid paraffin b d to start on 4th day (morning)
>
> Fourth day evening at 6 P.M. olive oil enema, 10 oz. run in slowly
>
> 12 midnight ol ric 1½ oz
>
> Patient to be kept on paraffin with or without phenolphthalein afterwards

One can hardly imagine a method better calculated to secure a wet and messy large bowel than the early days of this régime Surely the obvious way to keep the large bowel clean is to give the patient a low residue diet and wash out the colon from below It reminds me of the following recipe for expelling tapeworms The expulsion of worms like the hunting of the badger, has become a rare sport in Great Britain but it might nevertheless be conducted on more humane lines

> Fluid diet for three days initial dose of castor oil and daily dose of magnesium sulphate for three mornings On the fourth morning give extract filicis liq Two hours later give magnesium sulphate ½ oz. in water (Livingstone 1935)

Hæmatemesis and Melæna

During the last two years I have been specially interested in the treatment of hæmorrhage from the stomach and duodenum. I need hardly remind you that these patients are often severely dehydrated and in bad cases the blood urea is raised. The orthodox treatment is to forbid food and drink by mouth for 48 to 72 hours and to give fluid by the rectum. On this account it is customary to wash out the large bowel early in the illness My own treatment is unorthodox, inasmuch as I feed the patient by mouth from the onset, giving approximately 2500 c.cm. of fluid diet every 24 hours I do not give fluid by rectum as I was greatly impressed by Cullinan and Price s (1932) observations on the effects of enemata in alimentary hæmorrhage :—

> The fetish of giving large numbers of enemata is dangerous and to be deprecated This applies especially to the giving of enemata in the early days of treatment when recurrence is most likely to occur Hæmorrhage appeared to follow closely in many of these cases the giving of the first enema. In 73 cases enemata were given before the sixth day and 7 of these were rapidly followed by further hæmorrhage. In each of these cases the hæmorrhage would appear to have ceased before the giving of the first enema and the recurrence to have been excited by it In certain of the cases where this therapy was started early hæmorrhage followed subsequent enemata Thus in another 7 cases recurrent bleeding took place at a date when the danger of recurrence

is usually past and was shortly preceded by the giving of an enema We believe that these recurrences also may well have been excited by the enemata Only 17 cases received their first enema on or after the sixth day, all without harmful consequences "

Apart from the initial melæna, which does not occur in all cases, the bowels are not opened naturally for some days after a gastroduodenal hæmorrhage The constipation is not entirely attributable to morphia, as we have observed it in patients who have not received morphia Moreover, the bowel is very refractory to aperients for one or two weeks after a hæmorrhage, and quite a strong aperient, such as ½ oz of magnesium sulphate in 1 oz of infusion of senna twice daily, may fail to act for several days I have avoided aperients, and have not begun the use of enemata until between the fifth and the tenth day Liquid paraffin has usually been started by mouth about the end of the first week, but it has been as long as the eighteenth day before the bowels have acted naturally My results, which I hope to publish soon, have been very satisfactory There has been no discomfort or pain attributable to the constipation The tongue has remained clean or white from the milky diet, there has been no fœtor oris, no fever, no distension The appetite has usually been good, and when nausea and vomiting occurred, they appeared to be the result of hæmorrhage and anæmia and improved after transfusion

Conclusions

The time has now come for me to state some of my conclusions in this matter Routine purgation in acute illnesses or before operations is unnecessary and often harmful. In most acute diseases there is a tendency to dehydration Constipation is a result of acute disease and not a cause With few exceptions toxins are neither absorbed nor excreted through the bowel wall. Intestinal toxæmia is more likely to result from diarrhœa than from constipation Purgation disturbs and exhausts the patient, provokes gastro enteritis, especially in acute infections, increases dehydration and leads to uræmia in toxic states, excites vomiting, hæmorrhage, and distension in lesions of the alimentary tract Purgatives may be given in acute bacterial infections of the alimentary tract to secure elimination, and in increased intracranial pressure and status epilepticus for deliberate dehydration With these exceptions purgatives should not be administered to patients who are acutely ill.

There is rarely any hurry to get a patient's bowels open for four or five days Lubricants such as liquid paraffin can then be given to soften the fæces and enemata every 48 hours Constipation does not cause meteorism The most common cause of meteorism is handling or infection of the bowel in surgical patients It is described, but seldom seen, as a result of severe toxæmias such as pneumonia Perhaps the most important medical cause is typhoid fever, in which there is ulceration of the bowel and diarrhœa The gas, of which part is swallowed air and part is formed by decomposition of the intestinal contents, is distributed throughout the stomach and the intestine Surgeons have learnt to avoid meteorism in predisposed cases by banning anything by mouth and giving fluid parenterally In certain cases of peritonitis these measures are combined with continuous aspiration of the stomach and duodenum and repeated injections of morphia, and the bowels are kept at rest for ten days while the peritonitis resolves

Purgatives should never be given in diseases of which diarrhœa is a symptom, such as Addison's disease and thyrotoxicosis They are also very dangerous in measles, severe burns, and œdema With these exceptions one may sometimes temper science with art, for some patients become restive when the bowels are not opened naturally, even though enemata give satisfactory results, and an aperient may then do less harm than the mental perturbation It is an ancient observation that purgatives sometimes stop vomiting, and when peristalsis is upset, as in "biliousness" and similar conditions of reversed peristalsis, calomel may restore the normal gradient I should regard such a procedure as being on a par with the use of digitalis or quinidine in heart disease, a toxic drug being used to restore a disturbed neuromuscular rhythm Even though digitalis is kept in a poison cupboard while purgatives are accessible to everyone, I hope that you will never forget that purgatives are powerful and dangerous drugs One of the most important lessons we have learnt in recent years is the ease with which sick people may be killed by household remedies such as sodium bicarbonate and Epsom salts Hurst (1936) has suggested that more people have died from alkalis than from barbiturates, and I firmly believe that more people have died from purgatives than from digitalis

Summary

The purgation of patients who are acutely ill or who are to undergo an operation is often a magic ritual rather than a rational treatment Constipation is a symptom of acute illness and not a cause Patients who are acutely ill are dehydrated and dehydration is aggravated by purgation There is rarely any urgency for the bowels to act in acute illness, and when it is necessary they should be opened by enemata and not by drugs In alimentary hæmorrhage and in peritonitis there is often great benefit from keeping the bowels inactive for 5 to 10 days

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VICTORIA HOSPITAL FOR CHILDREN, CHELSEA —At a dinner held at Grosvenor House on Feb *11th* to celebrate the 70th anniversary of this hospital, over which the Duke of Gloucester presided between £3000 and £4000 was subscribed towards the reduction of its debt of £10 000

ROYAL INFIRMARY, MANCHESTER —During the past five years a deficit of £79 817 has been accumulated by this hospital and last year s deficit was nearly double that of 1935 The number of in patients admitted in 1936 was 10 902, plus 1581 to Barnes convalescent home, new out-patients numbered 20,831, and 173,339 attendances were recorded

HÆMORRHAGIC DISEASE OF THE NEW BORN

A STUDY OF SIXTY-ONE CASES

By Norman B Capon M.D Liverp, F R C.P Lond.

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Hæmorrhagic disease of the new born is important even though it is comparatively rare for it affects infants who are apparently healthy it endangers life with dramatic suddenness, and it often requires special treatment at the earliest possible moment When death is prevented and adequate steps are taken to cure the secondary anæmia as quickly as possible the infant shows no further tendency to bleed and enjoys normal prospects of health this fact should encourage all those concerned with new born babies to employ effective treatment immediately the disorder shows itself.

I have published two previous papers (1924, 1932) on this subject, based on 28 cases since then I have had a further 33 cases under my care and I propose to summarise the experience gained in the observation and treatment of these 61 patients 48 of whom were seen in the Liverpool Maternity Hospital 6 in the Royal Liverpool Children's Hospital and 7 in private practice In the 61 cases, there were 5 deaths and 56 recoveries.

NOMENCLATURE AND DIAGNOSIS

The name hæmorrhagic disease of the new born is not entirely satisfactory but while the cause of the condition remains unknown a better title cannot be given at least it is descriptive, but it must be used strictly and not applied to examples of neonatal hæmorrhage which are clearly secondary—e g slipping of umbilical ligature trauma sepsis syphilis or genital crisis of the new born Admittedly it may be impossible to exclude in any individual case the possibility of some of the above causes and a perusal of my case records (Table III) may invite criticism regarding the inclusion of a few of the cases but I have excluded from this study all examples of neonatal hæmorrhage which had an obvious primary cause.

The syndrome is quite clear-cut and there is seldom any difficulty in diagnosis Slight confusion is sometimes caused by (1) the infant who having swallowed maternal blood during birth or from the breast returns the blood by vomiting or passes it rectally and (2) the infant who develops an acute enterocolitis with blood in the motions. The first shows no general effects of hæmorrhage while the second suffers from diarrhœa and the motions contain fairly large amounts of mucus tinged red.

SOURCE OF BLEEDING

In most cases the chief bleeding is from the alimentary tract as will be seen from Table I:—

TABLE I—*Source of Bleeding*

Melæna alone	34
Melæna with hæmatemesis	21
Melæna with hæmatemesis and epistaxis and submucous (palate) bleeding	1
Umbilical hæmorrhage	1
Umbilical and submucous (palate) bleeding	1
Vaginal hæmorrhage	1
Bleeding from umbilicus urethra, and nose and submucous in mouth	1
Bleeding from umbilicus and vagina under mucous membrane of mouth and vulva and subcutaneous	1
	61

ÆTIOLOGY AND INCIDENCE

A typical case, with sudden and severe melæna closely resembles hæmorrhage from a peptic ulcer in adult life Many observers (e g Thelle 1910 Bayer 1929) have described ulcers found post mortem in these cases and I myself have seen several autopsies at which ulcerative erosions of gastric or duodenal vessels have been clearly demonstrated. No satisfactory explanation of these ulcers and erosions has yet been offered; it is of course possible that they are secondary to hæmorrhage in the submucous layer of the alimentary tract and in that case the ulcers must be regarded as secondary rather than primary It seems clear that there must be a general cause acting in those cases showing several sites of bleeding at the same time and even if the view is accepted that most cases of melæna are to be ascribed to hæmorrhage taking place from the base of a primary ulcer it is remarkable that, when the patient survives the ulcer always heals rapidly

Much work remains to be done upon the morphology and biochemistry of the blood in these cases the reports to date are conflicting, and further investigation will probably show that the disease may be subdivided into several types

Frequency—I can calculate the frequency only on the 48 cases seen in the Liverpool Maternity Hospital. During the period under review (January 1923 to September 1936) there were 19 421 live births in that institution hence the frequency of the condition was 1 in 405

Sex—Of the 61 infants 36 were females and 25 males.

THE MOTHER AND THE CHILD

Maternal and obstetrical influence—The parity of the mother is shown in Table II —

TABLE II—*Parity of Mother*

Primigravida	30
Second pregnancy	14
Third pregnancy	8
Fourth pregnancy	1
Later than fourth pregnancy	7
Not recorded	1
	61

It is not possible to draw any conclusions regarding the influence which place in family may have upon the occurrence of the disease. I do not think that the age of the mother or the type of labour have any bearing on the condition. In many cases the pregnancy and labour were quite normal but there were also examples of maternal toxæmia breech delivery forceps delivery induction, and Cæsarean section.

Condition of infant—The babies were usually full term and of average weight. The birth weights were as follows —

1	Under 5½ lb	5 cases	Average weight 5 lb 1½ oz Smallest weight 4 lb 7 oz
2	5½ lb to 9 lb	45	Average weight 7 lb 1½ oz.
3	Over 9 lb	4	Average weight 9 lb 4 oz. Heaviest weight 9 lb 8 oz
4	Unstated	7	

Age at onset of hæmorrhage—For 59 cases the average age of the child when bleeding began was 41½ hours. In 2 cases it had a late onset, one at 120 hours and another at 288 hours after birth.

PROGNOSIS

Prognosis is very difficult because it must depend in part upon the (unknown) cause of the condition But at present it appears that prognosis at all

TABLE III—SUMMARY OF CASES

Case No	Sex	Pregnancy	Weight	Pregnancy and labour	Age in hours when bleeding began	Type of hæmorrhage	Special treatment (Footnote (a))	Result (Footnote (b))	Additional notes
			lb oz						
1	F	2nd	7 14	Normal vertex after induction	26½	Melæna	Horse serum 10 c cm Mat B 10 c cm	R	Subsequently developed obesity
2	F	2nd	4 7	Toxæmia of pregnancy Vertex	120	Umbilical	Mat B 2 c cm I V (S L S)	R	Local treatment (tannic acid adrenaline) also used
3	M	4th	7 14	Normal vertex after induction	43	Melæna Hæmatemesis	Mat B 18 c cm Horse serum 10 c cm	R	Calcium lactate 3 grains 4 hourly by mouth for 3 days and horse serum ½ drachm by mouth Mother developed puerp insanity
4	F	1st	6 5	Normal vertex	24	Melæna Hæmatemesis	Horse serum 10 c.cm Mat B 30 c cm	R	
5	F	6th	5 4	Chronic renal disease Twins—both breech	40¾	Melæna Hæmatemesis	Horse serum 4 c cm Pat B 46 c cm Mat B 8 5 c cm Mat B 1 5 c cm I V (S L S)	R.	
6	F	6th	5 2		43½	Melæna Hæmatemesis	Horse serum 5 c cm Pat B 30 c.cm	D	
7	F	6th	8 1	Normal vertex	78½	Melæna Hæmatemesis	Fibrogen (Merrell) ½ c.cm subcut Mat B 26 c cm	D	
8	F	13th	5 8	Normal	16	Melæna Hæmatemesis	Pat B 20 c cm	R	Now 11 years of age and perfectly healthy
9	M	1st	8 15	Normal vertex	38	Melæna Hæmatemesis	Fibrogen (Merrell) 15 min subcut Pat B 23 c cm	R	Mother had three eclamptic fits after delivery
10	M	?	?	?	48	Melæna Hæmatemesis	Pat B 20 c cm	R	Infant born at home and admitted to hospital for treatment
11	F	1st	? ' premature	Short labour	84	Melæna	Pat B 10 c cm	R	Treated in own home
12	F	1st	6 10	Normal vertex	1	Melæna	Mat B 20 c cm Mat B 6 c cm I V (S L S)	R	
13	M	1st	6 5	Normal vertex	31½	Melæna	B 70 c.cm	R	
14	F	2nd	6 10	Normal vertex	17½	Melæna	B 30 c.cm	R	
15	M	1st	8 3	Normal vertex	5½	Melæna	Mat B 20 c cm	R	
16	M	1st	9 2	Normal vertex	41½	Melæna	Mat B 18 c cm	R	
17	F	2nd	6 12	Vertex R O P to R O A	36	Melæna	Mat B 15 c cm	R	
18	M	2nd	5 5	Vertex First of twins	38½	Melæna Hæmatemesis	Mat. B 45 c cm	R	The other twin (female 5 lb 7 oz) did not bleed
19	F	1st	6 4	Vertex R O P	44	Melæna	Hæmostatic serum 2 c cm Pat B 45 c cm	R	
20	M	1st	6 15	Cæsarean section	20½	Melæna Hæmatemesis	Pat and Mat B 85 c cm	R	Very severe case with waxy pallor Appeared normal at age of 2 years 10 months
21	F	3rd	7 4	?	25	Melæna Hæmatemesis	Horse serum 10 c.cm Mat B 20 c cm	R.	Born at home and admitted to hospital Pyrexia (max temp 104) followed bleeding and lasted 2½ days
22	F	5th	9 1	Normal vertex	55	Vaginal.	Mat. B 30 c cm	R	Severe bleeding considerably more profuse than in genital crisis began on 2nd day of (? dehydration) fever (Footnote (c))
23	M	3rd	5 12	Normal vertex	48	Melæna	Mat B 10 c cm	R.	Premature infant with cord tightly round neck white asphyxia Progressed well on discharge 6 lb 5 oz
24	M	3rd	? 'average'	Easy forceps	288	Umbilical Submucous (palate)	Mat. B 30 c cm	D	Infant born at home and treated there The cord had separated normally
25	M	1st	8 0	Normal vertex	30½	Epistaxis Melæna Hæmatemesis Submucous (palate)	Pat B 20 c cm	R	Infant born at home and treated there
26	F	1st	?10 0	Vertex Low forceps	32	Melæna Hæmatemesis	Mat B 20 c cm	R	Infant born at home and treated there
27	M	2nd	9 8	Normal vertex	48	Umbilical Epistaxis Urethral Submucous (palatal)	Pat B 14 c cm	R	Infant born at home and treated there. Slight case
28	F	3rd	7 6	Normal vertex	27	Melæna	Mat B 30 c cm	R	
29	F	3rd	?	Normal vertex	4½	Melæna Hæmatemesis	Hæmoplastin 1 c cm B 15 c cm	R	Infant born at home admitted to hospital
30	F	2nd	7 1	Normal vertex	78¾	Melæna Hæmatemesis	Mat B 20 c cm	R	A moderate hæmorrhage
31	F	1st	5 12	L O P to L O A Forceps delivery	60	Melæna	Mat B 40 c cm	R	Moderately severe bleeding
32	F	1st	6 9	Normal vertex	80½	Melæna	Mat B 9 c cm Pat B 20 c cm	R	Moderately severe bleeding
33	M	1st	9 0	Normal vertex	19¾	Melæna	B 50 c cm	R	Fairly severe bleeding
34	M	1st	6 10	Normal vertex	41½	Melæna Hæmatemesis	Mat B 20 c cm Pat B 60 c cm	R	A severe case bleeding continued 26 hours At 5 months progressing fairly well but still pale

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(a) Injections given intramuscularly unless otherwise stated Mat B and Pat. B = Maternal and Paternal blood B = Donor's blood I V = Intravenously S L S = Superior longitudinal sinus Subcut. = Subcutaneously

(b) R = Recovered D = Died

(c) (Case 22) A septic cause cannot be excluded with certainty because the child subsequently developed sepsis of the face and scalp pus aspirated (*Staphylococcus aureus*)

TABLE III—SUMMARY OF CASES—(*continued*)

Case No	Sex.	Pregnancy	Weight	Pregnancy and labour	Age in hours when bleeding began	Type of hæmorrhage	Special treatment (Footnote (*a*))	Result. (Footnote (*b*))	Additional notes.
			lb oz						
35	F	1st	6 9	Quinine induction Normal vertex.	59½	Melæna	B 114 c.cm B 80 c.cm I V (S.L.S)	R	A severe case, but at 2 months colour good and progress excellent
36	F	1st	7 1	Normal vertex	30	Melæna	Mat. and Pat B 100 c cm	D	
37	F	1st	6 7	Vertex Low forceps. (Face to pubes)	51	Melæna	Pat B 55 c cm	R	Small subconjunctival hæmorrhage attributed to birth trauma Severe melæna blood hæmoglobin 60 %
38	F	1st	7 6	Normal vertex	42	Melæna Hæmatemesis	Mat. B 20 c.cm Pat. B 70 c cm	R.	
39	F	1st	7 2	Normal vertex.	26½	Melæna	Pat. B 14 c cm	R	
40	M	2nd	6 3	Normal vertex	70	Melæna Hæmatemesis	Pat. B 45 c.cm	R	
41	F	1st	6 10	Normal vertex	36	Melæna	Mat B 5 c.cm Pat. B 40 c.cm.	R	Mother had pyelitis just after delivery and severe epistaxis about the time infant began to bleed
42	M	1st	7 13	Quinine induction Normal vertex	34½	Melæna.	Mat. B 30 c.cm	R	
43	F	2nd	7 6	Cæsarean section	63	Melæna	None	R	Slight to moderate hæmorrhage in one stool only
44	F	1st	8 10	Slight toxæmia of pregnancy Normal vertex	39	Melæna	Mat B 20 c.cm	R	Moderate hæmorrhage.
45	F	7th	7 8	Normal vertex	92	Umbilical. Vaginal Subcutaneous submucous (vulva and tongue)	Pat B 6 c.cm B 20 c.cm Pat B 30 c cm (I V foot vein)	R	Subcutaneous hæmorrhages (petechiæ and ecchymoses) very extensive (Footnote (*d*))
46	F	2nd	6 11	Cæsarean section for fœtal distress	69	Melæna	Mat. B 15 c cm	R	Infant was in occipito posterior position
47	F	2nd	7 14	Normal vertex	26	Melæna	Pat B 60 c.cm	R.	Father's blood W.R negative (Footnote (*e*))
48	F	2nd	5 9	Toxæmia of pregnancy 2nd of twins. Breech after internal version	39½	Melæna.	B 15 c.cm	R	Other twin (male 5 lb 8 oz.), with congenital craniotabes did not bleed
49	F	1st	7 12	Normal vertex	38½	Melæna. Hæmatemesis	B 47 c cm Pat B 50 c cm I V (jugular vein)	R	Severe case. Did not respond to intramusc. inject of blood but seemed to react at once to transfusion (30 hours after onset)
50	F	1st	" average weight."	Normal vertex	48	Melæna	Pat B 30 c cm B 100 + 60 c.cm I V (S L.S)	R	Infant born at home and admitted to hospital for treatment (Footnote (*f*)).
51	M.	1st	" average weight."	Normal vertex	48	Melæna	Mat. B 56 c cm Pat B 10 c cm	D	Infant born at home received 60 c.cm blood intramusc and sub cut before admission to hospital (Footnote (*g*))
52	M	3rd	8 6	Breech	56	Melæna	None	R.	
53	F	1st	6 3	Cæsarean section for placenta prævia	56	Melæna	Mat. B 30 c.cm Pat B 20 c cm	R.	After bleeding ceased child received 70 c cm paternal blood intravenously (S.L S) for relief of anæmia
54	M	3rd	6 12	Normal vertex	64	Melæna	Pat B 12 c.cm Mat. B 40 c.cm.	R	Small supernumerary right auricle but no other deformity found
55	M	9th	7 2	Ante-partum hæmorrhage Normal vertex	10	Melæna	Mat B 20 c cm	R.	Baby feeble at birth cried 15 min after delivery
56	M	1st	7 0	Normal vertex	30½	Melæna Hæmatemesis	Mat. B 44 c.cm Pat B 75 c.cm I V	R	Restlessness and crying until transfusion Severe bilateral talipes equino-varus
57	M	1st	9 4	Vertex Low forceps	35½	Melæna Hæmatemesis.	Hæmoplastin Pat. B 40 c cm Pat. B 100 c.cm I V (median basilic)	R	Slight right facial paralysis (due to forceps) (Footnote (*h*))
58	M	3rd	6 12	Normal vertex	12½	Melæna Hæmatemesis	Pat. B 36 c.cm Pat B 80 c.cm I V (S.L.S)	R	No improvement until transfusion but thenceforward uninterrupted
59	F	2nd	5 6	High lateral placenta prævia Vertex Willett's forceps	35½	Melæna	B 20 c.cm	R.	
60	M	1st	7 5	Normal vertex	1	Melæna	Pat B 30 c.cm Mat B 10 c.cm Pat B 50 c.cm I V (scalp vein)	R	A severe case.
61	M	2nd	6 2	Normal vertex.	50½	Melæna	Pat B 12 c cm	R	

(*d*) (Case 45) Blood examination (Dr R Chadwick) at time when slight hæmorrhage had just started Bleeding-time, 85 sec coagulation time 2 min , red cells 5 440 000 platelets abundant; red cells apparently normal white cells 13 600 (polymorphs 51 lymphocytes 43 % large mononuclears 1 % eosinophils 1 basophils 1 % transitionals 3 %)

(*e*) (Case 4) Blood examination (Dr Chadwick) red cells 2,500,000 hæmoglobin 40 %; bleeding-time 2 min coagulation time 3½ min platelets 140 000 white cells 12 600 (polymorphs 75 % lymphocytes 17 % transitionals 8 %) normoblasts seen per 100 white cells Red cells show a little anisocytosis and polychromatophilia

(*f*) (Case 50) Paternal grandfather and great-grandfather were said to be bleeders Two transfusions were given and when the first was undertaken the patient seemed moribund—colour white like paper air hunger gasping and sighing respirations

(*g*) (Case 51) On admission he was intensely exsanguinated and semicomatose; and bright red blood was coming from anus An intramuscular injection (10 c.cm) of blood was given while arrangements were being made for transfusion but the child died before this was begun

(*h*) (Case 57) Transfusion was not given until 36 hours after the bleeding began By then the baby was extremely anæmic and dyspnœic and was thought to be moribund Hæmorrhage ceased at once and the patient's general condition improved very quickly Weight at 4 months of age—14 lb events in the moderate and severe cases, is influenced chiefly by the rapidity and thoroughness of blood treatment Consideration of my cases does not indicate that maternal influences, such as the age of the mother or the character of pregnancy and labour, affect prognosis, while it is noteworthy that infants of small weight were not specially vulnerable Of the five who died, one (a twin child) was 5 lb 2 oz in weight, but the other fatalities were all in full term babies of average weight Four children who weighed less than 5 lb 8 oz at birth recovered

TREATMENT

The mild form of the disease is undoubtedly self-limited, and the child will probably recover without any special treatment Cases of average severity seem to respond satisfactorily to the intramuscular injection of human blood, but having admitted that the disease tends to be self limited, it is obviously difficult to decide whether special treatment has played any definite part in the recovery

Severe cases are urgently in need of intravenous blood transfusion, which is undoubtedly life saving It is not yet certain that these transfusions of blood have a specific action in controlling the hæmorrhagic disease, but even if they are not specific in their effect, at least they usually preserve life until the bleeding tendency has passed. Thus any criticism of this treatment is of theoretical rather than practical interest.

It is impossible to form any definite opinion whether a case, when first seen, is likely to be of slight, moderate, or severe degree, hence very close observation is essential.

The details of treatment given to the first 28 cases are set out in my second paper (1932), added experience has suggested certain alterations and modifications, and I shall therefore deal with the treatment of the last 33 examples only Of these—

(1) *Slight or moderately severe* cases (25) were treated as follows —

Blood injected intramuscularly	23
Blood not given	2

The average dose of blood given to each child was 36 6 c cm There were two deaths one of these children received 100 c cm of blood and the other 66 c cm In both cases I criticise my treatment, for these babies should have been given intravenous transfusions of blood

(2) *Very severe* cases (8) received intramuscular injections of blood (average dose 47 c cm), and when it was obvious that the hæmorrhage was not controlled, intravenous injections of blood were given The average dose was 78 c cm and all these children recovered, though two were thought to be moribund when the transfusion was given, and in one case the operation was suspended for a few moments because the baby appeared to have died

We have not met with even the slightest ill effects from blood transfusion in these cases, but it is admitted that the number of cases so treated is comparatively small.

The general plan of treatment now adopted is as follows —

1 Umbilical or superficial hæmorrhage receives *local treatment*—e g, retying of cord, application of adrenaline or tannic acid. Viper venom would be worth a trial, but I have not had an occasion for using it in this type of case

2 *General treatment* includes observation of rectal temperature and heart rate at half hourly intervals, application of warmth by hot bottles or electric blanket complete rest in the cot, and 5 per cent glucose in drachm doses, given orally by spoon, to allay thirst

3 An *intramuscular injection* of human blood (20 c cm) is given The blood need not be typed but it should be citrated (sodium citrate two third grain to 10 c cm blood) The injection may be made into the outer aspect of the thigh and it is wise to introduce the needle below the midpoint of the thigh, in a cephalic direction in order that the puncture may be outside the napkin area and so out of danger of infection When it is necessary to repeat injections different masses of muscle should be used, for instance the deltoid region If bleeding is not severe, as judged by the colour and general condition of the patient as well as by the total volume of blood lost, further special treatment may not be required If the child becomes restless again, or if more hæmorrhage occurs within two hours after the injection, a further dose (20 c cm) of blood is given intramuscularly, and provisional arrangements are made for a transfusion These include (*a*) notification of an operator skilled in this type of treatment, (*b*) blood grouping of infant and donor, and cross matching of their bloods, (*c*) examination of the patient to find the most suitable vein, preferably on the scalp or foot

4 If intramuscular injections have not been successful, a *transfusion* of 60–100 c cm of compatible blood is given It is seldom that transfusion has to be repeated In future blood transfusions will probably be used more frequently as treatment for the anæmia secondary to hæmorrhage

5 In regard to the *feeding* of the child, there seems to be no danger in allowing the baby to return to breast milk as soon as the bleeding has ceased, this course is certainly less harmful than withholding fluids for fear that an ulcer may bleed again if alimentary peristalsis is stimulated.

6 Measures directed to the *repair of anæmia* and depleted blood-volume are started two or three days after bleeding has ceased, they are important because an anæmic infant is in constant danger of infections and of parenchymatous degenerations in vital organs—e g, myocardium, liver, and kidneys In severe cases, a blood transfusion (50 to 75 c cm.) should be given, and in all cases iron (one grain of iron and ammonium citrate, in mixture form, twice daily) and a concentrated liver extract (one half drachm twice daily by mouth) are beneficial. Later, full attention should be given to the provision of vitamins, and in the winter months treatment by artificial light may be ordered

In conclusion I wish to thank the honorary surgeons and assistant surgeons of the Liverpool Maternity Hospital for allowing me to treat their cases and I am indebted to my clinical assistants (Drs Kathleen Wadsworth, W F Gaisford, and Muriel Duvall) and to the resident medical officers for their loyal coöperation Miss I Forshall, F R C S E, has performed most of the blood transfusions and it will be evident that the successful treatment of the severe cases was largely due to her conscientious assistance and technical skill

Cases other than those treated in the Liverpool Maternity Hospital were referred to me by the following, to whom I wish to express my thanks (case number shown in parentheses) Drs Dingwall Fordyce (8), William Johnson (45) G A Garrett (29), W D Peock (47), E R Evans (50), L Earlam (51), H T Nixon (11 and 26) B A Cowan (25) E L Roberts (27) J W Cowen (57), R Jones (58), and the late Dr C G Skinner (24)

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EFFECTS OF PROLONGED ŒSTRIN-STIMULATION ON THE CERVIX UTERI

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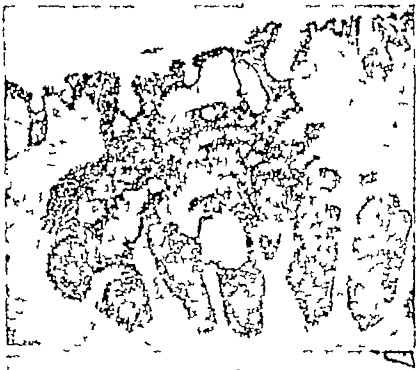
THE reputed carcinogenic power of œstrogenic substances has lately been discussed in this journal in relation to possible dangers in the clinical use of œstrin [1] So far the histological changes induced in the reproductive organs of women and monkeys by excessive or prolonged dosage with œstrogenic substances have not been considered by those who have participated in the controversy The evidence of carcinogenesis is derived mainly from the study of cancer strains of mice and refers chiefly to the mammary glands More recently Loeb and his co workers [2] have recorded a single instance of cancer' arising during a course of œstrin injections in the uterus cervix and vagina of a mouse belonging to a strain in which spontaneous cancer of any kind is rare According to Perry [3] cancer of the uterus is a very uncommon finding in small rodents and she describes three cases in which it developed after 6–10 months of treatment in mice which she was painting with benzene solutions of œstrone and of 1 : 2 : 5 : 6 dibenzanthracene She does not state whether or not the strain she was investigating has a high incidence of spontaneous cancer There is a likelihood that it has since 43 per cent of the colony developed carcinoma of the breast Loeb and his co workers are careful to point out that the change they describe cannot be categorically defined as malignant in view of the impossibility of knowing whether or not it would have continued if the administration of œstrone had been stopped Perry on the other hand, not only declares the change in her animals to have been cancer but also states without giving the grounds for her belief that it would not have occurred if only dibenzanthracene had been given

Both women and monkeys react to prolonged and massive dosage of œstrone by the development of cystic endometrial hyperplasia [4] The condition does not extend more caudally than the isthmus uteri, and competent authorities agree that the hyperplasia is in no sense a predisposing cause to uterine cancer [5] Furthermore œstrogenic changes can be reversed by withdrawing the œstrogenic stimulus or they can be counteracted by means of some substance such as progesterone or testosterone

Certain changes that are simultaneously produced in the cervix uteri of monkeys have however been regarded with suspicion and it is necessary to consider them carefully Overholzer and Allen [6] injected a group of six ovariectomised rhesus monkeys (*Macaca mulatta*) twice daily for periods varying between 16 and 90 days with from 50–100 rat units of œstrin About once a week the cervices of these animals were traumatised by means of scissors and in addition metal clips were attached to the cervices of some of the group (the number treated in this way is not stated) Towards the close of the experimental period three of the animals were also given an extract of corpus luteum A seventh ovariectomised monkey was subjected only to œstrin and corpus luteum treatment for 51 days and was killed 33 days after the cessation of all injections An eighth castrated monkey was subjected only to cervical trauma for 86 days. All the animals showed some hyperplasia of the cervical epithelium and in most of them metaplasia had also occurred the typical cells being replaced by clumps of stratified epithelium which had invaded the myometrium Overholzer and Allen regarded these changes as precancerous and accordingly submitted their sections to Dr Ewing of Cornell University for an opinion Dr Ewing's report was that the changes should be regarded as precancerous or as early established cancer [6] It is important to note that the metaplasia occurred not only in the animals that were both traumatised and given œstrin injections, but also in the one that was given œstrin and not subjected to cervical trauma Indeed, Dr Ewing's most unfavourable report applied to the latter animal It is also of interest that the cervix of this animal showed many regions of infection, in addition to epidermization and areas of atypical epidermoid cells

The process of epithelial metaplasia that occurs in the cervix of monkeys as a result of excessive œstrin stimulation has since been studied by Engle and Smith,[7] who injected four ovariectomised rhesus monkeys daily with 200–800 rat units of œstrin for periods of 60 80 110 and 170 days respectively All four animals exhibited the same process of metaplasia observed by Overholzer and Allen The severity of the process was neither correlated with the total amount of œstrin administered nor with the length of the periods of injections Engle and Smith point out that the squamous cells in the cervix are not connected with the vaginal epithelium They



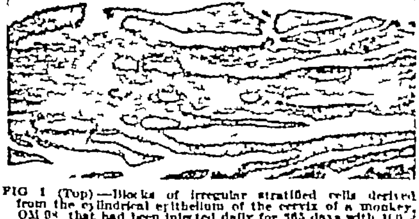


FIG 1 (Top)—Blocks of irregular stratified cells derived from the cylindrical epithelium of the cervix of a monkey, OM 94 that had been injected daily for 365 days with 100 γ of œstrone (× 45)

FIG 2 (Bottom)—Corresponding part of cervix of another monkey OM 95 that had been injected for a similar period with œstrone but with interruptions between courses of injections, showing normal epithelium (× 45) also believe that the replacement of the normal cylindrical epithelium is effected from proliferating groups of cells along the basement membrane The metaplasia is an orderly process, and it is the opinion of Engle and Smith, and of a number of pathologists and gynæcologists who examined their sections, that the change presents "few of the characters of malignancy," no single instance being seen "where the direction of growth penetrated the supporting tissue" This opinion is thus contrary to that submitted by Overholzer, Allen, and Ewing

AUTHOR'S OBSERVATIONS

A rhesus monkey (OM 98) in my own colony was injected daily with 100 γ of œstrone for 365 days—a period which so far as monkeys are concerned is twice as long as any thus far reported The animal's cervix shows the same condition of metaplasia that is described above (Fig 1)

As a rule the change in the epithelium begins in the deepest parts of the glands, which become filled with a plug of altered epithelial cells (Fig 3) In some regions the normal cylindrical epithelium is heaped, and sometimes the plates of invading cells appear to be more columnar than squamous in character especially in the peripheral parts of the metaplastic patches No epithelial pearls occur in these patches which do, however, occasionally show degenerative changes Mitoses are uncommon There are no areas of infection, but leucocytes are occasionally seen both in the blocks of squamous cells, in the myometrium, and between the cells of the surface and glandular epithelium

The process of epithelial growth appears altogether orderly, and the metaplastic patches are everywhere insulated from the myometrium by a definite basement-membrane (Fig 3) In places the insulating substance is a thick homogeneous layer, which is presumably derived from the collagenous connective tissue, and which contains no nuclei (Fig 5)

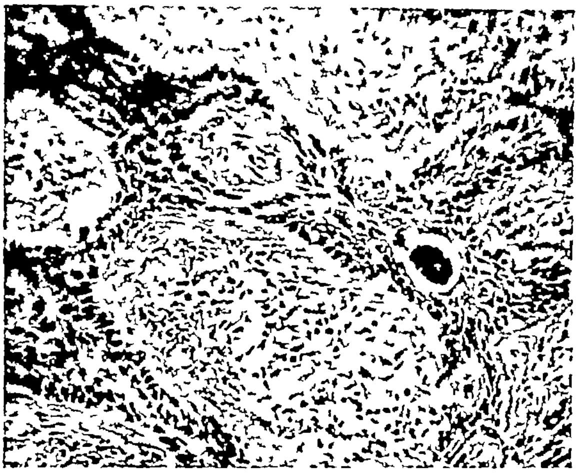
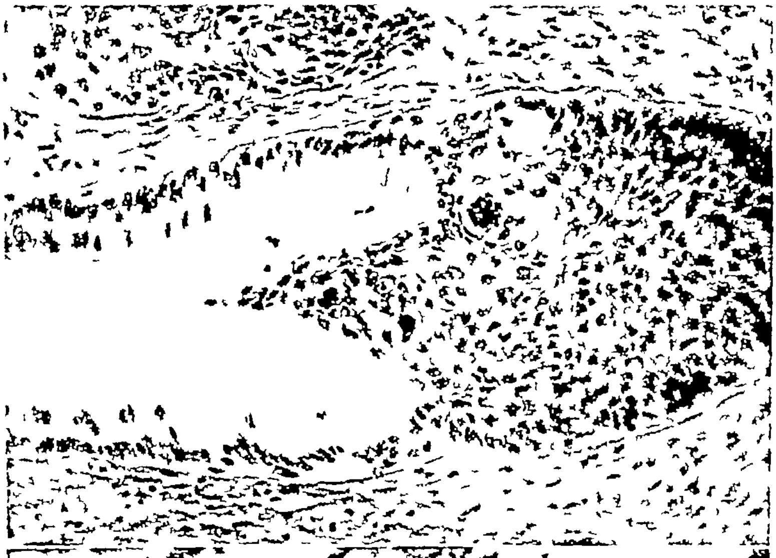


FIG 5 (OM 98)—A thick homogeneous layer of 'ground substance free of nuclei insulates the blocks of metaplastic cells from the myometrium (× 250)

Neither Prof G W Nicholson of Guy's Hospital, nor Dr H M Carleton of Oxford, who very kindly examined the sections, regard the epithelial changes as either malignant or precancerous Prof Nicholson commented on the resemblance of the specimen to the condition of erosion of the cervix in women

The fundus uteri is in a condition of cystic endometrial hyperplasia and has been discussed elsewhere [8] The vaginal epithelium presents the usual characters that are associated with œstrogenic stimulation, being deep, extensively cornified and in process of rapid desquamation The mammary glands, as well as several other regions of the body, were also examined microscopically, but no pathological changes were observed. It may also be noted that the animal showed no adverse reactions to the treatment during the year she was under injections and that in this respect she was no different from some 30 other monkeys in my colony that have been injected daily with œstrone, with almost no remissions, for periods of between one and two years

It would be expected, a priori that the changes in the cervix, like those induced by œstrin in the uterus or prostate are reversible It may however be noted that one of Overholzer and Allen's animals exhibited a metaplastic cervical epithelium 33 days after it was last injected with œstrone The total amount of hormone given was 2802 5 rat units My own experience differs in this respect from theirs A rhesus monkey (OM 95) received ten courses of œstrone injections over a period of 399 days the total amount of hormone administered being 230,100



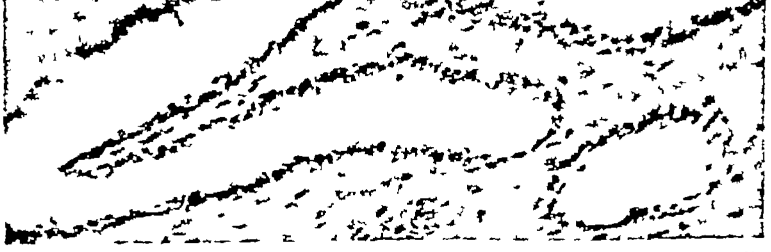


FIG 3 (Top)—(OM 98) A plug of cells derived from the cylindrical epithelium fills the base of a cervical gland The basement membrane is well shown (× 250)

FIG 4 (Bottom)—(OM 95) Normal cervical epithelium (× 250) international units (at least ten times the amount given by Overholzer and Allen). The first seven courses lasted 40 days each and the last three 14 the intervals between the courses being the latent periods that precede the uterine bleeding which follows the administration of œstrone The animal was given 322 daily injections during the entire experimental period of 309 days The uterus was removed on the fourteenth day following the last injection.

The cervix of this animal is much smaller than that of the one which received 365 successive daily injections (cf Figs 6 and 7) Moreover its epithelium is very little if at all different from the normal (Figs 2 and 4) There are no plates of squamous cells of the kind seen in OM 98 and no signs of metaplasia except in the region where the squamous vaginal meets the cylindrical cervical epithelium and where an intermixture of squamous and columnar elements cannot be regarded as an entirely unexpected finding

The line of transition of cylindrical and squamous vaginal epithelium is normally very variable and on the basis of a study of 11 specimens recovered from rhesus monkeys Clark and Corner [9] have suggested that the zone of transition rises with increasing age According to Koff,[10] on the other hand it descends towards the vaginal fornices in human fœtuses during organogenesis Koff quotes Robert Meyer's observation that the junction of vaginal squamous and cervical cylindrical epithelium always occurs at first in the cervical canal, and that the cervical epithelium then destroys the stratified cells as far as the external os. It was Meyer's belief that in about one third of cases the process of replacement is so pronounced as to produce a condition of congenital erosion of the cervix. Whichever way the evidence is regarded it thus indicates that there is a conflict between the two types of epithelium in the cervical canal I have suggested elsewhere [11] that squamous hyperplasia can in general be regarded as a primary response of tissues in whose development the epithelium of the urogenital sinus has played a part If the view that the primate vaginal epithelium is derived from the sinus is accepted (for discussion see [12]) the occurrence of metaplasia in the cervix following œstrogenic stimulation becomes understandable

Even if such metaplasia be regarded askance from the clinical point of view it is plain that the possibility of provoking such a change should not be considered a reason for advising against œstrin therapy in general For in the first place it has to be remembered that the effects of œstrin are reversible so that the normal condition of the tissues can be restored by withdrawing the hormone ; and in the second there can be little need in clinical practice for prescribing the hormone continuously over prolonged periods The healthy condition of the uterus of OM 95 and the absence of any adverse effects in other monkeys that have received œstrin in successive courses of injections for periods of from one to two years suggest that the best way of administering the hormone clinically would be in similar courses of injections lasting 2–4 weeks, intervals being left between the separate courses to allow of œstrin withdrawal uterine bleeding

SUMMARY

Metaplastic changes occur in the cylindrical epithelium of the cervix uteri of rhesus monkeys receiving œstrone injections for long periods (about three months), the columnar epithelium being replaced in places by squamous cells which invade the myometrium The metaplastic process is an orderly one and the patches of squamous cells are insulated by a remarkably thick basement membrane The process does not possess the general characters of malignancy and it is reversible Thus it was not displayed by a monkey that was given œstrin daily in successive courses of treatment (totalling 322 daily injections) over a period of 300 days It is suggested that in clinical practice the hormone should be given in courses of 2–4 weeks with intervals between courses to allow of œstrin withdrawal uterine bleeding

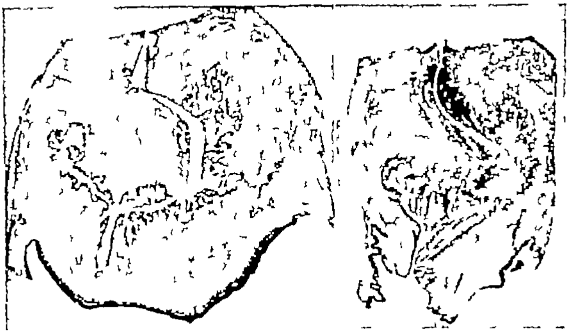


FIG 6 (Left) —Cervix of monkey (OM 98) that received œstrone daily for a year (× 3)

FIG 7 (Right) —Cervix of monkey (OM 95) that received œstrone for a similar period but in successive courses of injections (× 3)

The expenses of this study were defrayed from a grant kindly given by the Medical Research Council The œstrone was generously provided by the Organon Company

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UNIVERSITY OF SHEFFIELD —The Rockefeller Foundation New York has made a further grant of £250 in aid of research in the department of pharmacology

A COMPARISON BETWEEN THE ADSORPTIVE ACTION OF KAOLIN AND KAOLIN-ALUMINA MIXTURE ON FÆCAL BACTERIA

By William Smith, M.D Camb
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Kaolin (aluminium silicate) has been used for centuries in the East for the treatment of epidemic cholera Walker (1921) showed that its curative action, in addition to being of a mechanical nature, was due to its power of adsorbing bacteria He also suggested that this inert substance acted as a filter in the intestine, and thus prevented absorption of toxic substances into the blood stream Braafledt (1923) determined that kaolin will adsorb large numbers of bacteria in fluid media, and also that it neutralises and thus prevents the toxic effects of such organisms as *Bacillus typhosus*, *Bacillus para typhosus*, *Bacillus enteritidis* Gaertner, *Bacillus dysenteriæ* Shiga, and the vibrio of cholera, he also demonstrated its successful therapeutic use in such infections as cholera, dysentery, ulcerative colitis, and acute enteritis

Kaolin, a chemically inert finely divided powder, has a very large surface combined with a high adsorptive power An apparent disadvantage of its use in treatment, however, lies in the fact that kaolin alone in a liquid suspension settles down fairly rapidly, and forms a mass which cannot readily be completely broken up If this " clumping " could be prevented by the addition of a substance which would hold the kaolin in suspension, and thus allow it to act as completely as possible, much improvement in its adsorptive powers might be anticipated

It has been shown by Crohn (1929) that powdered aluminium hydroxide can be used as a substitute for other alkaline substances in the treatment of peptic ulcer Aluminium hydroxide, however, possesses its greatest adsorptive power when in the colloidal state (gel), its action in the alimentary canal being due to this property of adsorption, and not to chemical neutralisation A preparation containing a suspension of kaolin in aluminium hydroxide gel (kaolin alumina mixture) therefore suggested itself Such a preparation is found to be neutral, has great adsorptive properties, is tasteless, and odourless Swalm (1934) showed that such a mixture, when added to a fluid medium, produces a much more voluminous and flocculent sediment than is the case when kaolin alone is used. The supernatant liquid of a suspension of fæces, in vitro, can be completely decolorised by a kaolin alumina mixture, but only incompletely by an equal weight of kaolin alone.

EXPERIMENTS

In view of the finding that a kaolin alumina mixture apparently is more efficient, as regards its adsorptive power, when compared with kaolin, it became of interest to determine whether such a mixture did, in fact, adsorb a greater number of bacteria than kaolin alone The kaolin alumina mixture used in the following experiments contained 20 per cent aluminium silicate (kaolin) and 2 5 per cent aluminium hydroxide gel. This was a similar strength to that used by Swalm

In the preliminary experiments directed to this end, suspensions of fæces in water were prepared, and strained through butter muslin in order to remove any extraneous matter To these suspensions equal weights of kaolin and kaolin alumina mixture were added, the resulting mixtures were well stirred and then allowed to stand for 24 hours at room temperature At the end of this period bacterial cultures were put up from which bacterial counts were made These experiments did not indicate any very definite finding as to whether kaolin or the mixture had adsorbed the greater number of bacteria

Some modification appeared to be necessary in the technique, in order definitely to determine if any difference could be detected in the power of adsorbing bacteria That kaolin adsorbs bacteria is well known, and this property is made use of extensively in medicine It seemed therefore desirable that further tests should be carried out at the temperature at which the substances are normally used—viz, body temperature—and further it seemed possible that the time factor might enter into the matter During the preliminary experiments it had also been determined that, in order to make accurate bacterial counts possible, the fæcal suspensions would have to be comparatively weak. The technique finally adopted for these experiments was the following —

A weak suspension of fæces was prepared and strained through butter muslin Three measuring cylinders of 250 c cm capacity were taken, and each was filled with the fæcal suspension (Fig 1) One of these (A) contained fæcal suspension alone, whilst to the second (B) 3 grammes of kaolin was added, and to the third (C) an equal weight of kaolin alumina mixture (Fig 1) The kaolin and kaolin alumina mixture were well stirred into the suspension The three cylinders were then placed in the incubator at 37° C, and at various intervals samples from each were taken from which bacterial counts were

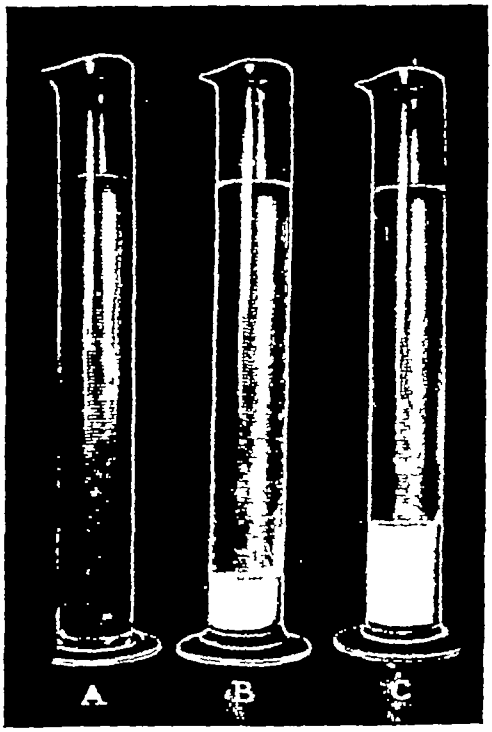

FIG 1 —Cylinders filled with (A) fæcal suspension alone, (B) 3 g kaolin (C) 3 g kaolin alumina mixture note greater bulk of sediment

made After each sample had been removed the mixtures were again well stirred and the cylinders then replaced in the incubator

METHOD OF MAKING THE BACTERIAL COUNTS

The principle was similar to that in use for making bacterial counts from samples of milk. The medium employed was peptone agar

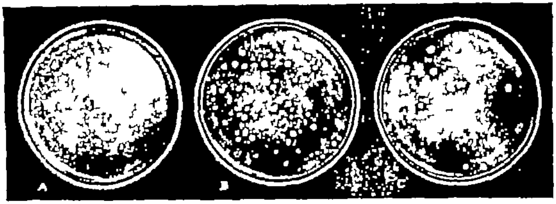

FIG 2.—Cultures prepared from different dilutions of fluid in the cylinders shown in Fig 1 (see also Table) (A) Fæcal suspension alone 1/100 dil. (128 000 bacteria per c.cm). (B) with kaolin 1/10 dil. (10 400 per c cm.) (C) with kaolin-alumina 1/10 dil (2280 per c.cm)

This was melted and then cooled to approximately 45° C Accurate quantities of the sample to be tested were now added the tubes containing the medium and the sample well shaken and the resultant mixtures poured into a Petri dish The medium was allowed to set and then incubation proceeded for twenty four hours before the counts were made

For each experiment varying dilutions of each sample were employed These were prepared similarly to the method used for the plate count of milk. The usual strengths used were undiluted 1/10 1/100 1/1000 of which 1 c cm of each was added to a tube of peptone agar

The actual bacterial counts were ascertained from the dilution which gave the most suitable growth for the purpose and the figures quoted in the Table were obtained as a result of multiplying the actual dilutions employed by the number of colonies definitely present in the medium.

Table showing Growth of Bacteria in Fæcal Suspensions

Cylinder	Time of incubation	Test 1		Test 2	
		Dilution of suspension	Bacteria (per c cm)	Dilution of suspension	Bacteria (per c cm).
(A)	30 min.	1/100	67 000	1/100 (Fig 2A)	1 8 000
	1 hr	1/100	102 000	1/100	170,000
	24 hrs	1/1000	3 200 000	1/1000	3,600 000
(B) Kaolin		3 grammes		6 grammes	
	30 min	1/100	19,200	1/10 (Fig 2B)	10 400
	1 hr	1/100	•1,200	1/10	7 760
	24 hrs	1/100	00,000	1/100	24 400
(C) Kaolin alumina		grammes		6 grammes	
	30 min	1/10	4 080	1/10 (Fig 2C)	2 280
	1 hr	1/10	4 040	1/10	1 880
	24 hrs	1/10	6 050	1/1	414

It was notable that when 6 g of the kaolin alumina mixture were used, not a single colony of *Bacillus coli* was obtained in the twenty four hour culture The *B coli* however were still numerous in the similar culture using kaolin alone

Using stronger fæcal emulsions having a definite coloration Swalm's findings of the greater efficacy of the kaolin-alumina mixture in decolorizing and removing the odour from the suspension as compared with kaolin alone were confirmed.

Hydrogen ion concentration—The possible explanation suggested itself that the more efficient adsorptive power for intestinal bacteria of the kaolin alumina mixture might be due to an alteration in reaction. Control experiments however showed that there was no appreciable difference between the hydrogen ion concentration of kaolin or kaolin-alumina mixture emulsions in water alone or when these two substances were added to the type of fæcal suspensions used in the above experiments.

Effect of supernatant fluids—A further possibility was that the supernatant fluids obtained after shaking kaolin or kaolin-alumina mixture may have some bactericidal value Tests made in a similar manner to those employed to ascertain the Rideal Walker coefficient were put through The same amount of a culture of *B coli* was added to varying volumes of the supernatant fluids Glucose peptone broth was used as a culture medium. In no instance even when only a small number of bacilli were introduced was any evidence obtained that the growth of the bacilli introduced had been inhibited in any degree Control experiments were made in each case in which there was no addition to the supernatant fluid.

CONCLUSIONS

Under the above conditions a kaolin alumina mixture is more efficient than an equal weight of kaolin as an adsorbent for fæcal bacteria

When an adequate amount of the kaolin alumina mixture is present an almost complete adsorption of the bacteria occurs with entire removal of the *B coli*.

The explanation of these findings appears to lie in the adsorption quality and not to be due in any way to a change in the hydrogen ion concentration or to a bactericidal effect of the supernatant fluid

I am much indebted to my senior technician Mr J W Roberts for taking the photographs from which the illustrations have been made

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Clinical and Laboratory Notes

SERUM CALCIUM IN THE PSYCHOSES

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When assessing the chemistry of the blood in the psychoses care must be taken to exclude other possible causes of variation apart from that which may be due to the psychosis itself Higher calcium values have been reported in diabetes arthritis deformans and syphilis lower calcium values in nephritis bronchial asthma and uncomplicated heart failure In the present investigation therefore patients suffering from any of these illnesses are excluded In particular syphilis was excluded by a routine micro Meinicke test and kidney disease by a blood urea estimation and a microscopic examination of the urine deposit Other conditions which are well known to influence the blood calcium, such as rickets, tetany, and sprue, are not likely to be overlooked.

In order to obtain some idea of the accuracy of the technique utilised in this investigation (by the method of Kramer and Tisdall), eight solutions of known strengths varying from 7 15 to 13 32 mg per 100 c cm of calcium chloride were made and estimations carried out The error varied from + 0 55 per cent to − 3 4 per cent, the average being − 1 28 per cent

In the classification of the psychoses as they appear with the figures tabulated below, only pure clinical pictures were included, manic depressive cases with schizoid features, for example, are omitted, as well as any case where the diagnosis for some reason or other appeared to be still in doubt

Psychosis	No of cases	Range	Average
Schizophrenic	70	9·0– 9 9 10 10·0–10 9 39 11·0–11 9 20 12 1 1	10 48
Melancholic	47	8 2– 8 9 2 9 0– 9 9 15 10·0–10 9 27 11·0–11 4 3	10·07
Manic	13	9 6–11·8	10 55
Epileptic	15	9 0–11 0	10 98
Dementia paralytic	15	8 2–11·0	9 67

DISCUSSION

(1) If we take the normal range of variation as 9 to 11, it appears that there is a tendency for higher values in the schizophrenic states This confirms a recent report by Minker-Bogdanova and others (1934), who also note progressively lower values with the advance of the disease It should be noted that the great majority of the 70 cases here investigated were recent admissions

(2) Of greater interest are the findings in the manic-depressive group, which exhibit lower figures for the depressed phase and higher for the manic phase On several occasions this was confirmed by a serial investigation in a particular case, of which the following are three examples —

	Depressed phase		Lucid phase	
A	Feb 6th	10 8	March 20th	11·0
B	Feb 12th	9 1	20th	10·2
C	May 1st	9 75	August 27th	10 4

That there is a parallel relation between the blood-calcium level and the emotional tone has been frequently suggested—e g, by Laird and Stephen (1933)—high calcium values being associated with cheerful states and low with depressions Among previous reports of such a correlation in the manic depressive psychoses is that of Henry and Ebeling (1926)

(3) In the epileptic psychoses the blood calcium tends to higher values How far the epilepsy itself and/or the type of accompanying psychosis contributes to this is very difficulty to say

(4) Average values are found in dementia paralytica

I wish to thank Dr V L Connolly, medical superintendent of Park Prewett Mental Hospital for permission to carry out this investigation, and Mr S Davenport, the laboratory assistant, for help in the technical work

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NEPHROSTOMY

BY SIR WILLIAM DE C WHEELER, F R C S I
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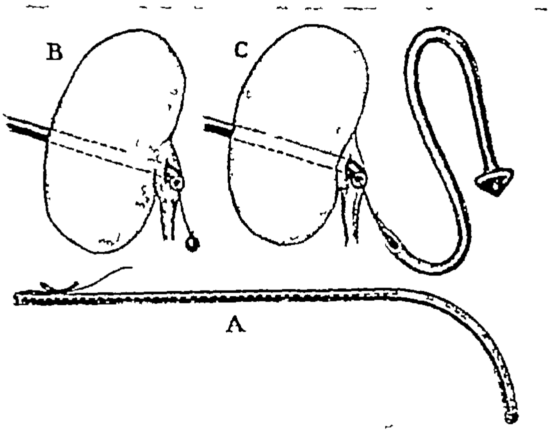
TEMPORARY drainage of one or both kidneys has become an operation of comparative frequency in recent years Many cases are on record in which nephrectomy appeared to be indicated but was avoided of necessity owing to the condition of the other kidney Simple drainage often resulted in a surprising recovery Again nephrostomy is indicated when a severe operation on the lower urinary tract is contemplated, just as colostomy is employed before extensive operations upon the rectum Plastic operations upon the renal pelvis are also rendered more safe and secure if temporary drainage is employed

The following technique for drainage of the kidney has been found convenient and satisfactory in a number of cases operated upon during the past few years It is a modification of the Cabot method (Cabot and Holland 1931) The special instrument employed is a metal catheter with the top removed so as to provide a terminal eye (see Figure) A steel ball is held firmly in this eye by a thread pulled through the lumen of the catheter with a long stylet The instrument was originally designed to aid in the repair of ruptured urethra (Wheeler 1929)



A.—A modified metal catheter with a steel ball fixed in the terminal eye by means of a thread passed through the lumen

B —The renal pelvis has been incised, the ball after acting as a guide is released

C —The ball has been cut off and the thread attached to a winged catheter

The kidney is exposed, but free mobilisation is seldom necessary A scratch is made through the capsule near the middle of the convex border The instrument is passed through this minute incision via the renal cortex into the pelvis The steel ball pushes forward the wall of the latter and acts as a guide for an opening When this is made the thread is unhitched from the proximal end of the instrument The ball is now released and removed The thread is attached to a No 22 or 24 French winged catheter and pulled upon until the end of the catheter enters into the terminal eye of the metal instrument The latter is withdrawn carrying with it the rubber catheter The winged portion slips into the pelvis and should lie in a position to drain the lower calyx and to pass straight outwards through the lumbar wound without angulation No sutures are introduced to aid fixation or to close the pelvis

In about a fortnight the tube may be removed with the aid of a stylet, which with traction on the tube narrows the expanded extremity If further drainage is required a straight rectal tube is introduced immediately It must be the same length as the original catheter measured from the point where it emerges from the wound to the expanded end The winged catheter should be a shade larger than the metal instrument to ensure a tight fit in the renal substance and so avoid bleeding

By the method recommended there is no difficulty in finding the pelvis and manipulation of the kidney is reduced to a minimum

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SPONTANEOUS (PATHOLOGICAL) DISLOCATION OF THE ATLAS

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CASES of spontaneous dislocation of the atlas are being recognised and reported with increasing frequency and the following case appears to throw light on the ætiology of this uncommon condition about which there has been some discussion.

A boy of 7 was admitted to hospital exceedingly ill with the history that 11 days before adenoid curettage had been performed; the tonsils had not been removed on account of the presence of boils elsewhere A week later he began to complain of severe pain in the neck

On examination he was lying in bed with a slight degree of torticollis and forward displacement of the chin and screamed at any attempts at examination. He was obviously most sensitive in the region of the upper part of the cervical spine and when he altered his position, which happened infrequently on account of his pain, he held his head steady with both hands The temperature was 102 F the pulse-rate 120 and the respirations 36 A diagnosis of inflammatory atlanto-axial dislocation was made and confirmed by radiography (Fig 1)

Treatment —Under general anæsthesia the head neck, and chest were enclosed in plaster without any attempt at reduction of the dislocation. Under the anæsthetic the adenoid region was found to be still in a sloughing condition but the anterior arch of the atlas was not felt to be unduly prominent

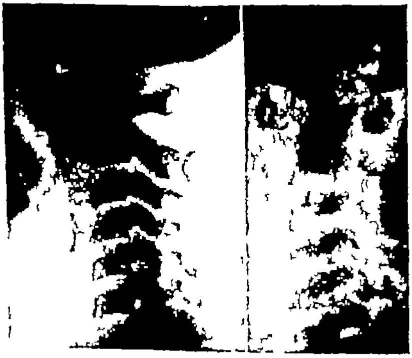

FIG 1.—Radiograms showing pathological dislocation of the atlas Left: before treatment Right: on discharge four months later: displacement unchanged but joint functionally normal.

Progress —The temperature continued to swing between 101° and 104 F and at the end of a fortnight a pyæmic arthritis of the left ankle developed as a painless swelling Arthrotomy and lavage were performed with subsidence of the ankle infection which however, flared up again a month later and was then treated by open drainage After the first operation the temperature fell to an irregular 99 F and the condition of the neck was obviously greatly improved but at the end of another month the child developed a painless pathological dislocation of the left hip (Fig 2) This was treated by means of a strapping extension of 10 lb, decreased to 5 lb after a few days when the dislocation was found to be reduced The neck plaster and the extension were removed three months after admission. The plaster could probably have been removed a month earlier as it had become loose and the head movements within a small range were free and painless but it was felt to be a useful safeguard The boy was discharged with full use of all the affected joints a month later four months after admission An X ray examination at this date showed that the amount of displacement of the atlas remained unaltered.

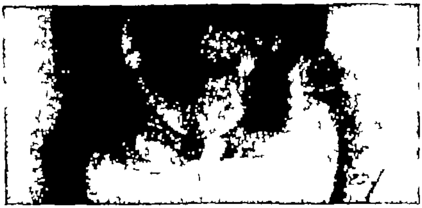

FIG 2.—Pathological dislocation of left hip in same case as Fig 1

A useful survey of reported and personal cases has been made by Watson Jones (1932) The patients are most commonly in the first decade of life and a traumatic factor is absent or was very mild. The first reported case is that of a nurse who killed a patient with such a dislocation by turning the head a little to one side while doing a dressing Another story has been told of a surgeon demonstrating a case to a class of students as a rheumatic torticollis he mentioned inflammatory dislocation as a differential diagnosis, and said it was a very rare condition which could be diagnosed by the fact that if the chin was chucked the patient died a remark which he proceeded to illustrate with fatal results. The next case was also one of torticollis Saying that in view of the rarity of the condition this could not possibly be another of the same he killed the second patient likewise

In all the cases there is an inflammatory lesion in the upper part of the neck—tonsillitis nasopharyngitis suppurating glands mastoiditis and so forth. In the case reported here there was probably a septicæmia due to the boils and this was responsible for the infection of the adenoid site The infection had probably spread backwards by direct continuity but according to Watson Jones the inflammatory focus causes a hyperæmia in the region of the base of the skull softening the attachments of the transverse ligament of the atlas which may be avulsed the hyperæmia also accounting for the decalcification of the anterior arch of the atlas that may be present Wittek (1908) calls the condition distension luxation stating that it is a distension of the bursæ between the odontoid process, the anterior arch of the atlas, and the transverse ligament, which leads to a stretching and weakening of the ligaments The inference to be drawn from *this case appears to be that the condition is similar to that of the inflammatory pathological dislocation which occurred in the hip, and in the words of* Choyce (1932)

> "*Among the chief factors making for articular strength* are the integrity of the joint surfaces and the tone of ligaments and muscles If disease has weakened any of these dislocation will readily occur As a rule in pathological dislocations several agents are at work, though usually one predominates"

The typical clinical picture is similar to that in this case A child complains of a stiff neck some days after, for instance, a throat infection, and is found to have a painful torticollis which he endeavours to protect by his own efforts The anterior arch of the atlas may or may not be felt as a prominence in the nasopharynx, and radiography is the key to the diagnosis For *treatment*, Watson Jones recommends reduction of the dislocation by extension and fixation in plaster The dislocation, however, can of necessity be only moderate in degree if the patient survives, and since the patients are usually young children—and it is astonishing how children will compensate for slight or even severe bone and joint mal alignment in the process of growth—it seems unnecessary to do more than to put the inflamed area *at rest by means of a restrictive plaster*, thus avoiding the risk of reduction Blunck (1935) and Stammers and Frazer (1933) mention cases which have been treated in this manner with good functional results

The moral of this story is that one should be on the look out for the condition among the ordinary cases of acute torticollis, if there is any doubt, a lateral radiogram of the neck will remove it

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MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTIONS OF PSYCHIATRY AND MEDICINE

AT a joint meeting of these sections the chair was taken by Dr T A ROSS, president of the section of psychiatry A discussion on the relation between

Mental Disorder and the Activities of the Endocrine Glands

was opened by Prof F L GOLLA He supposed, he said, that no member would defend a pathogenesis of mental disorders based upon diseases of the ductless glands There was very little evidence even that the symptomatology of mental disease was influenced by endocrine disorder Recent work suggested that there were nerve cells in the diencephalon which had a secretory function, and it might be inferred that their secretion was that which had been attributed to the posterior and possibly to the anterior lobe of the pituitary body This research in itself opened a new vista of possible hormonic influences on the central nervous system A number of "nervous systems" influencing one another by internal secretions would make the work of the psychiatric pathologist easier by releasing him from the task of explaining the influence of one system on another in terms of the old biophysics—excitation and conduction There was not the faintest physiological evidence *that any particular* secretory disturbance accompanied any particular form of psychosis For once however the histologist had the satisfaction of finding that the microscope gave him information which physiological methods would not The gonadal system and particularly the testicles, would sometimes show disturbances of structure which the pathologist had a right to assume were accompanied by corresponding disturbances of function Sir Frederick Mott had shown the connexion of testicular pathology with schizophrenia Failure of testicular function was not however responsible for mental disorder Anyone who kept animals knew *that a male animal suffered loss of* function if deprived of the female for long enough Studies of eunuchs throughout history showed that their deprivation delivered them from the stress which might lead to mental disorder

Dr Golla then showed a series of slides prepared by Sir Frederick Mott, illustrating the testicular disorders associated with dementia præcox The testicle showed, progressively, reduced spermatogenesis, shrinkage of tubules, crinkling due to fibrosis interstitial proliferation, thickening of basement membrane and lipoid in the interstitial tissue For some curious reason nobody seemed to have given these observations the importance they deserved In mental disorder one was dealing with a general profound bodily disturbance of which one feature was a disorder of conduct, and another was a disturbance of the endocrine system The testicular changes, however were very striking and were never found in other conditions

If the male sex organs of an animal were wholly ablated and the animal were then given testicular extract or graft, the animal would sometimes show normal sexual behaviour It must be concluded that the testicular hormone had a particular affinity for the nervous mechanism concerned in sexual acts This was the only physiological support for a suggestion that a hormone might act directly on the nervous system The pituitary syndrome, being under the governance of the diencephalon did not offer direct proof of such hormonic influence Endocrinologists seemed sometimes to forget that every organ received a nerve fibre The central nervous system was a most labile mechanism, and, if an effect could not be produced in one way, it would invoke another An endocrine disorder might be imagined to produce a general hyper or hypo excitability but it was difficult to imagine it affecting one particular function

A paper written by Sir WALTER LANGDON-BROWN was read by Dr S LEVY SIMPSON Endocrinologists he said, since recognising the relationships of the pituitary and diencephalon were less dogmatic than in the past They realised that the endocrines and emotions influenced each other Endocrines were not a common cause of psychoses, the relationship between them had been overrated Indirectly endocrinopathy might contribute by causing disfigurements and other bodily abnormalities Endocrine stigmata were not uncommon in mental disease, but were often coincidental Psychoneurosis might often be benefited by correcting glandular disorders—

notably those of the thyroid. Thyroid medication had turned many patients from mental hebetude to normal functioning The myxœdematous patient was apt to become morose and suspicious projecting his own failures to function on to his environment Occasionally he became maniacal; thyroid in such cases was curative Hyperthyroidic patients showed irritability and a tendency to cry O cursed spite that ever I was born to set it right regarding themselves as the only righteous persons in an ill world They indulged in nerve storms. Graves's disease had been well described as a state of continuous fear Its causes were sex sepsis and emotional stress the third of these factors might act through the hypothalamus and thyrotropic hormone of the anterior pituitary Many psychological accompaniments of dyspituitarism were found both in excess and deficiency Both the pituitary giant and the Fröhlich case tended to lack inhibitions They showed off stole set fire to things and otherwise tried to compensate for their feeling of inferiority They were liable to live in phantasy Alternations of confusional insanity and glycosuria had been reported and were explicable now that the diabetogenic hormone was recognised

Addison's disease might be associated with apathy inertia irritability and pessimism Virilism from cortex tumours might cause loss of modesty and maternal instinct Fear might become a dominant feature if the medulla were stimulated Insanity from diabetes had now disappeared, but hypoglycæmia might produce mental symptoms ranging from excitement to mania and homicide In hypoparathyroidism—in addition to tetany—there might be hallucinatory disturbances Pineal tumour caused precocious mental and physical development in some instances but more often feeble mentality later associated with epileptiform manifestations Gonadal disturbances were frequent in dementia præcox An insistently expressed egoism with resentment against the unappreciative world indicated hypogonadism Very few patients with inadequate gonads escaped inferiority which might develop into psychosis At the menopause there was temporary over production of prolan in an attempt to stimulate the failing ovary A hypertrophied prostate removed normal sexual inhibitions but there was no adequate evidence for a male climacteric.

DISCUSSION

Dr A P CAWADIAS thought that Kretschmer had unwittingly confirmed Mott's work his asthenic type was the hypogonadal The male hormone and the anterior pituitary had a particular action in schizophrenia but they were not causal Every patient must be considered as an individual Many mental disorders had been described as of endocrine origin on insufficient evidence The basis of endocrinology was metabolism and biochemistry Physicians should describe the mental phenomena of endocrine disorders and needed more precision in doing so All hormones acted on the nervous system

Dr F A. PICKWORTH said that it was misleading to speak of the hypothalamus and pituitary as an endocrine unit because many other glands were influenced by or acted through the hypothalamus The pineal adrenal hypothalamus and gonad could each and all cause pubertas præcox by an influence on the hypothalamic centre The problem there was that of the relation between the hypothalamus on the one hand and the symptoms of mental disorder and the activity of endocrine glands on the other Many cases of Simmonds's disease showed separation of the pituitary lobes by colloid or septic material Pituitary activity was undoubtedly disturbed by septic material filtering through from the nose and nasal sinuses Diplococci had been demonstrated passing up into the pituitary from the sphenoidal sinus. In 31 per cent of cases examined sphenoidal sinus sepsis had been demonstrated. There was no direct relationship between endocrine activity and mental disorder; the connecting link was capillary disturbances in certain parts of the brain

Dr A S PATERSON said that the work of Kurt Richter had a direct bearing on psychiatry It was an investigation of spontaneous activity Man's activity depended on various external factors but also on internal drive and this factor had been studied in the rat In the normal rat a definite rhythm of four days was seen in the female its activity being maximum when on rut and being halved on each succeeding day No other cycle was constant The removal of certain glands—viz the pineal thymus spleen posterior pituitary seminal vesicle uterus and cervix had no effect but if the anterior pituitary were removed the rat became totally inactive Some effect was produced by removal of the adrenal and gonad but hardly any result appeared on removal of the thyroid. Injections of suitable glands greatly increased activity It seemed that this conception of a spontaneous activity was a valuable one based on scientific data It had a bearing on manic-depressive psychosis Some patients probably suffered from genuine failure of spontaneous activity

Dr T R. C FRASER described a case in which endocrine abnormalities had been found and which had been cured by removal of the abnormalities The patient a woman of thirty suffered from neurasthenia on which were superimposed catatonic attacks associated with disturbance of consciousness She had an adenoma of the pancreas and was relieved by its removal Her symptoms were not explicable in terms of her blood-sugar level.

Dr N G HARRIS pointed out that cases of thyrotoxicosis fell into three groups those in which the thyroid was the primary factor those in which the psychological side was the important one and those in which the two went hand in hand Much could be done by correlating the effects of treatment with the type of case Women with menopausal depression might have normal menstruation, irregular menstruation or none at all The effects of endocrine treatment in the varying types should be correlated.

Dr H A. PALMER said that continuous narcosis was sometimes dramatically successful in mental cases The question was whether or not the hypothalamic centres were touched in these cases It might be possible to show that barbiturates were more successful than other sedatives and this would prove that the hypothalamus was involved There was a biphasic effect something connected with the psyche and something connected with the hypothalamus If the psyche could be given ten days respite from fear by deadening the hypothalamus it would often be able to deal with the condition

Dr DORIS ODLUM referred to the menstrual exacerbation of symptoms in women This was a strong point in favour of correlation between endocrine and psychological factors

Dr LEVY SIMPSON in reply said that prolactin seemed to influence the clucking and brooding of hens, and that the pituitary prolan seemed to have some effect on sexual libido. The reciprocity of influence between mental processes and endocrines could not be over-emphasised. Shock might cause premature menopause and fear might produce amenorrhœa. Hyperadrenalism and emotion were well known to be associated; it had been said that all the emotions of a love scene could be produced by a dose of adrenaline. Many hyperthyroid cases did well on psychotherapy alone. A vagus type of hypo-insulinism might produce disorders of conduct. Loss of weight might be extreme. Anorexia nervosa threw some light on the subject, for it might present all the symptoms found in Simmonds's cachexia. One factor in their production was nervous, but the other was a vitamin deficiency. Animals on a vitamin-deficient diet showed atrophy of pituitary and adrenal—after a phase of congestion and hypertrophy. Speaking broadly of disorders of conduct and emotion, any observer must admit their frequency in endocrine disorders. They varied according to the underlying neuropathic tendency, but were definitely associated with endocrine disorders, which were by no means rare illnesses but occurred in nearly everyone. Very few had a "normal" endocrine balance. Endocrine changes were familial, constitutional, and racial. The post-menopausal woman whose pituitary and adrenal cortex had undergone hyperplasia took an entirely different and more virile, capable, original, and fearless outlook on life. She became a successful business director, perhaps the wife of the henpecked husband or the all-powerful matriarch. Another type was the pituitary adiposity of adolescence or later life: slim arms and legs, good teeth, a fascinating smile, a beautiful face and a fat body. Such a woman was loved and loving, musical, often with a rich mezzo-contralto voice, and had great social activity. She was alternately happy and sad in a manner recalling the manic-depressive psychosis. With treatment the results were often so dramatic that it was hard to assume that anything but the endocrine factor had produced the change. In other cases some symptoms remained.

SOCIETY OF MEDICAL OFFICERS OF HEALTH

AT a meeting of the fever group of this society held on Jan. 30th, Dr. H. S. **BANKS**, vice-president, being in the chair, a discussion on

Acute Enteritis

was opened by Dr. **ROBERT CRUICKSHANK** (North-Western Group Laboratory, L.C.C.) with a brief review of the bacteriology and ætiology of the condition. In the investigation of this problem the closest coöperation between clinician and pathologist was essential. Material for examination (fæces, vomitus) should be sent to the laboratory at the earliest possible stage in the illness since invading pathogens were rarely found after the third or fourth day, although in dysenteric infections the organism might occasionally persist for several weeks. Where there was a likelihood of delay in transmitting the specimen, use should be made of 30 per cent. glycerin in 0.6 per cent. saline as a preservative. He advocated the more frequent use of the rectal swab. The patient's blood should be examined for specific antibodies between the seventh and twenty-first day. Although sometimes negative, the presence of specific agglutinins might confirm a diagnosis of Sonne or Flexner dysentery where nothing was found in the stools; a titre of 1/10–1/20 for the former and 1/50 for the latter would be diagnostic in children.

In dealing with the ætiology he suggested a division into infectious and non-infectious enteritis, although it was sometimes difficult to separate the two groups on clinical grounds. In infectious enteritis the important organisms were (i) The dysentery bacilli, principally *B. dysenteriæ* Flexner and *B. dysent.* Sonne. While the former was usually associated with a true dysentery or ileo-colitis, the Sonne bacillus might cause gastro-enteritis or dysentery. The spread of infection—and the infectivity was often great—was by human contact or convalescent carriers. (ii) The salmonella organisms, of which the most common in this country was *B. aertrycke*. Animals were the main reservoirs of infection in this group, the mouse being a not uncommon carrier of *B. aertrycke* (or *B. typhi-murium*). *B. paratyphosus* B might be associated with a gastro-enteritis. (iii) *Staphylococcus aureus*, the importance of which as a cause of gastro-enteritis had been stressed by American workers. It was frequently a milk-borne infection and in the examination of suspected food bacteriologists should not neglect to look for it.

Non-infectious gastro-enteritis might be divided into primary and secondary types, the former being synonymous with summer diarrhœa (epidemic or zymotic enteritis) and the latter occurring as a complication of another infection, particularly measles and broncho-pneumonia. Summer diarrhœa affected particularly artificially fed infants of the poorer classes during the summer or autumn months; four factors—artificial feeding, infancy, unhygienic surroundings, and high temperature—combined to produce the disease. A raised external or internal temperature affected adversely gastric and intestinal secretions, so that in infants the initially low gastric acidity tended to be neutralised by the highly buffered cow's milk and the sterilising mechanism in the stomach and upper intestine was interfered with. The consequent ascent of coliform organisms from the lower bowel to this virgin soil, plus possibly bacterial infection of food, prevented proper digestion, and the general irritative action produced a gastro-enteritis. The use of low-buffered acidified foods would probably help both in the prevention and treatment of this type of enteritis. It was well to remember that breast-fed infants were practically immune.

Dr. M. **MITMAN** (Eastern Hospital, L.C.C.) said that diarrhœa was the pivotal symptom of enteral infections in children. Two other groups of alimentary disorders in which diarrhœa was a feature had to be excluded: those due to parenteral infections and those caused by digestive disorders. Distinction was not always easy. In some enteral infections, such as the enteric fevers and the dysenteries, the causative organisms were known. In others various organisms had been described but their rôle was in dispute. There remained a mixed group (gastro-enteritis, summer diarrhœa, cholera infantum, infectious enteritis, winter vomiting, alimentary toxicosis, &c.) in which specific micro-organisms could not be implicated but which behaved in all respects like transmissible diseases. There were pædiatrists who denied that infection played a primary part in these cases, but the evidence in favour of an infective origin was strong. Infections of known causation could usually be differentiated on clinical, bacteriological, and serological grounds. Clinical diagnosis was usually most difficult in infants, in whom the typical syndromes might be replaced by a gastro enteritis Sonne dysentery and paratyphoid fever were examples The diagnosis of parenteral infections depended upon the detection of the focus In the remaining diarrhœas differentiation was difficult in the absence of bacteriological and serological aids Some assistance could be obtained from variations in the clinical syndromes, from biochemical changes in the stools, from the season of the year and from involvement of other systems such as the respiratory tract and the middle ear Changes however were not sufficiently specific to be an accurate guide to classification.

The practice at the Eastern Hospital was to segregate the dysenteries (almost exclusively Sonne) and congregate the remaining cases in an enteritis ward This heterogeneous group had a fatality rate ten times as great as the dysenteries If as seemed probable these cases of enteritis included a number of infections of unknown causation, it was not justifiable to nurse them side by side in an open ward It was also illogical to segregate cases of dysentery with a relatively low fatality rate and leave other infections with a higher rate, together It was in fact much more important to remove from an open ward a case of diarrhœa with a negative dysentery report than one with a positive finding In the mixed group the mode of transmission was still uncertain Infection by ingestion was probably the commonest method but there was evidence that some particularly those occurring in winter were conveyed by droplets. This might explain the *frequency of middle-ear and respiratory infections in some* outbreaks of diarrhœa

It was proposed in future to treat all cases at the Eastern Hospital by a combined cell and diet kitchen technique Every case of enteritis whether primary or secondary to other infections such as measles and whooping-cough was to be *treated as infectious* and each case was to be considered as a separate infection from every other case Patients were to be nursed in separate cells Feeds were to be prepared in a special milk room by a gowned masked, and gloved nurse carrying out an aseptic technique After use bottles and teats were to be sterilised in a special steriliser in the kitchen and passed through a hatch into a drying chamber in the milk room. Scrupulous care was to be taken in the disposal of excreta Destructible squares were to be used where possible Sluicing of foul linen was to be avoided as far as possible; if unavoidable the nurse was to wear a rubber apron galoshes and gloves, and forbidden to enter the milk room By these measures it was hoped to minimise cross infection in enteritis.

Dr **David Haler** (London) said the classification he favoured was a clinico pathological grouping based upon the clinical examination of the child and a careful bacteriological examination of the stool

Group 1 with a high mortality showing no abnormality in stools except for their frequency The child was over whelmed by a severe toxæmia or perhaps septicæmia. The normal ratio of coliform to lactic acid bacilli was maintained in direct films. Cultures showed no abnormality

Group 2 with rather a lower mortality associated with focal sepsis and in these cases the disease was not so acute The cardinal finding was a reduction in the lactic acid to coliform bacillary ratio

Group 3 was a complex *one* associated with various organisms actually attacking the gut The organisms might be cocci or bacilli and comprised the usual enteral infections. Pus and blood were usually *present* in the stool

Group 4 was associated with a depression of general bodily resistance by other diseases and invasion of the gut by proteiform bacilli

The prognosis in Group 3 was relatively good; in Group 4 it depended on the associated disease Groups 1 and 2 were truly parenteral Group 3 and its subdivisions were enteral. Group 4 was secondarily enteral in character He concluded by emphasising the extremely high infectivity of the true dysenteries and their relatively low mortality

Dr **A Joe** (North Western Hospital, L C C) said he was interested to learn that Dr Mitman's precautions against the spread of intestinal infection (since he proposed to employ cell isolation) included those designed to exclude droplet infection Those present including himself would probably be loth to give up the hypothesis of manual transmission as satisfactorily accounting for spread in the preponderance of cases, but the work of W F Wells in America if confirmed would reopen the whole question of air borne infection Under experimental conditions Wells had shown that intestinal organisms had maintained their viability in air currents when attached to droplet nuclei and these might account for such a rapidly spreading outbreak as described in Bristol by Parry and Peters He himself had had one such experience but had been unable to exclude the possibility of food contamination by a wardmaid who had had an acute attack of diarrhœa three weeks prior to the outbreak which was not disclosed until a rapid succession of cases of Sonne dysentery caused the fullest inquiries to be made

Dr **J S Anderson** (Grove Hospital, L C C) agreed with Dr Mitman that as far as the infectious diseases hospitals were concerned diarrhœa was either infectious or not As it was sometimes impossible to differentiate every case of diarrhœa should be regarded as potentially infectious and isolated He referred to an outbreak of twelve cases of Sonne dysentery among which was a child ten months old, to whom attention was drawn on the occurrence of one green motion without other symptoms That green motion on culture was found to contain *B dysenteriæ* Sonne He thought more attention should be paid to the anal toilet in children's wards and that members of the nursing staff should report at once even the slightest attacks of diarrhœa in themselves

Dr **D S Sutherland** (Manchester) referred to cases of recurrent diarrhœa of dysenteric character admitted for investigation to a base hospital in Northern France during the latter part of the war Other than the cases of bacillary dysentery which could be attributed to an organism of Shiga Flexner or Morgan type or cases attributable to *Entamœba histolytica* many were found to be due to amœbic infection The pathological report in many of these indicated the cause as *Entamœba coli* while other cases were reported as due to *Balantidium* (*Paramœcium*) *coli* and *Giardia* (*Lamblia*) *intestinalis* Amœbæ might he thought be the cause of recurrent diarrhœa in this country

A mild outbreak of dysentery occurred in October-December 1935 in the wards of Monsall Hospital mainly confined to two wards of the 45 cases 41 were patients and 4 nurses The disease was highly infectious but mild with no deaths The characteristic feature was frequent relaxed offensive stools In 31 cases mucus was present in the fæces and in 18 of these blood was present in streaks; there was no altered blood; In 9 cases the stools were green In 22 cases there was a rise of temperature during the attack, the rise occurring on a few occasions before any change in the stools was noticed and in others after the diarrhœa commenced The temperature was raised in most cases for one day only, in 2 cases for five and six days, the rise was over 100° F in 5 of the 22 cases, 2 reaching 104° In 4 cases only was there abdominal pain, in no case was there vomiting The organisms isolated in the cases examined were of the Sonne type The source of the outbreak was not determined

In searching for the source of such outbreaks he thought the organisation of the hospital kitchen should be inquired into Dust originating from earth attached to unprepared vegetables might readily infect the food supply, and he would like to see the preparation of food, particularly vegetables, completely separated from its cooking Minced meat should be entirely used on the day of cooking, what was left over might readily harbour and grow organisms implanted by dust

LIVERPOOL MEDICAL INSTITUTION

At a meeting of this institution on Feb 4th, with Prof R E Kelly, the president, in the chair, a paper on the

Medical Treatment of Hepatitis and Cholecystitis

was read by Prof J W McNee (Glasgow) He began by speaking of the definition of hepatitis, describing it as the response of the liver to injury Apart from abnormalities and tumours, most of the hepatic disorders described in text books under separate names could be united as examples of hepatitis The pathological process varied from cloudy swelling in fevers, through fatty infiltration or degeneration to the most severe hepatitis of all —necrosis of the liver cells or of large areas of liver tissue, the so called acute necrosis (yellow atrophy) of the liver Even the condition commonly known as cirrhosis of the liver was readily included as "chronic interstitial hepatitis," analogous with chronic interstitial nephritis Various factors influenced the effects of hepatitis—whether this was acute or chronic, temporary or severe The two most important were, first, the great excess of liver tissue over normal needs, and, secondly, the amazing power of regeneration of liver cells The essential point in the treatment of all forms of hepatitis was to give the damaged liver the best chance to regenerate, and glucose was the only support we could offer it

Turning to cholecystitis, Prof McNee remarked on its commonness, and on its infrequent diagnosis in its earliest stages when medical treatment was of avail The possibility of catarrhal cholecystitis must be considered in every case of indigestion not due to obvious organic disease of the stomach such as ulcer and not responding to simple treatment The suspicion of cholecystitis was increased if flatulence was a notable symptom From the standpoint of treatment it was important to know whether the infection was deep in the wall of the gall bladder only, as surgeons suggested, or in its fluid contents If it was in the wall antiseptics excreted in the bile would be unlikely to have much therapeutic effect, and it would be preferable to use some remedy acting through the blood In the diagnosis of catarrhal cholecystitis Prof McNee attached great importance to the use of the duodenal tube to obtain samples of bile for microscopic examination

Dr N B Capon referred to some of the forms of hepatitis seen in childhood, and supported the use of glucose in these cases, especially when combined with insulin

Dr R E Roberts, while agreeing with Prof McNee that the information obtainable from cholecystography is sometimes unreliable, held that the help obtained in the majority of cases is more exact than that available from any other source In a normally functioning gall bladder or in a frankly non filling gall bladder, the presumptive evidence in favour of normality or pathology of the gall bladder was very strong In the case of opaque gall stones direct radiography might suffice, but with non-opaque gall stones cholecystography might provide incontrovertible evidence There was, however, a type of gall bladder in which the evidence given by oral cholecystography was open to criticism—namely, the type which fills well, empties normally, but throughout the examination shows a shadow of subnormal density It was not at all clear whether the radiologist ought to regard such appearances as evidence of subnormal concentration and an indication of cholecystitis, or whether it was merely an indication of something amiss with the absorption of the dye from the bowel and with its subsequent excretion by the liver So many factors had to be considered in the transit of the dye from the mouth to the gall bladder that many possibilities in the nature of faulty absorption or elimination must if possible be excluded before the diagnosis of cholecystitis was made Such exclusion seemed at present impossible without resort to intravenous cholecystography

Prof Henry Cohen, in acknowledging the diagnostic value of duodenal intubation, nevertheless emphasised the importance of correlating the evidence it afforded with that derived from clinical and radiological investigation Cholecystitis might be the sole manifestation of such lesions as gall stones or neoplasms in the biliary tract, and its adequate treatment depended on a recognition of the underlying causative factors Of the value of cholecystography he spoke feelingly, for it was in the Liverpool Medical Institution that he showed, with Dr R E Roberts, the first series of cholecystograms taken in England But as a clinician he was alive to its dangers Pain in the right upper quadrant of the abdomen in the days before cholecystography was an exercise in careful anamnesis Now too frequently the mere hint of discomfort in this area associated with slight flatulence led to a radiological examination of the gall bladder and thence to cholecystectomy if gall stones were revealed But gall-stones were not uncommonly symptomless and their association with certain symptoms might be accidental and not causal He had seen the gall bladder and its contained stones removed for pain which later proved to be due to spinal tumour, caries, carcinoma of the lung, myocardial ischæmia, right pyelectasis, and other lesions which ought to have been recognised He considered Prof McNee's analogy between liver and kidney infections most helpful and proposed that it should be carried a step further Might it not be that some cases of cholangitis and cholecystitis occurred independently of hepatitis, although the liver had excreted the infecting organism, might not the infection persist in the gall bladder after the organism had ceased to be excreted by the liver? If so, it was to be expected that some cases of gall stones with associated cholecystitis would show hepatitis whilst others would not The hypercholesterinæmia of certain types of nephritis did not predispose to gall-stones The medical treatment of established cholecystitis apart from the mild catarrhal types which might resolve without any treatment was still on the whole disappointing Judging by cholecystography appropriate foods caused biliary drainage as efficiently as concentrated solutions of magnesium sulphate Massive doses of hexamine often produced gastric and urinary discomforts whatever dose of alkalis was given with them. Olive oil and Decholin allayed symptoms. Prof. Cohen doubted whether removal of the gall bladder as a suspected source of focal sepsis was ever justified unless the gall bladder itself was giving rise to symptoms which even in the absence of general toxic disturbances were severe enough to justify its removal There was a danger in some centres of the gall bladder becoming Bernard Shaw s nuciform sac.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

At a clinical meeting of this society held in Manchester on Jan. 22nd, Dr J W Bride (Manchester) the president, being in the chair a preliminary account of the working of the

Hormone Clinic at St Mary s Hospital

was given by Dr J W A. Hunter (Manchester) who began by expressing his indebtedness to his colleagues at the hospital for permission to record the results. It was premature he said to draw any conclusions but he hoped the results might be helpful to those who were considering setting up a similar clinic During the first six months some 90 cases came to the clinic most of whom being referred there from the out-patient departments Some were deemed unsuitable for treatment some had only commenced treatment in the latter weeks but there remained 52 cases that had received sufficient treatment to justify a criticism of the results The cases treated were as follows —

Secondary amenorrhœa	20
Sterility dysmenorrhœa	6
Hypomenorrhœa	11
Menorrhagia of puberty	4
Pruritus vulvæ	5
Repeated miscarriage	3
Menorrhagia	2
Primary amenorrhœa	1

Of the 20 cases of secondary amenorrhœa 14 were temporarily cured that is to say the periods had returned after treatment by varying amounts of intramuscular œstrin; but in only 2 of these cases had the restoration of function been permanent In 4 cases treatment in large doses had failed to restore the menstrual flow a result at variance with those recorded by Kaufmann In 5 cases of pruritus vulvæ associated with the menopause 4 had been definitely cured by œstrin therapy In 4 cases of adolescent menorrhagia 3 had been cured by treatment with ultramuscular progestin In 17 cases of scanty menstruation associated with dysmenorrhœa or sterility 11 had shown no improvement with prolonged treatment and in 6 there had been some slight increase in the flow In no instance had the dysmenorrhœa been affected *and no case of sterility* had become pregnant Three cases of repeated miscarriage had gone to term with progestin treatment combined with the administration of vitamin E. One case of primary amenorrhœa had been treated with large doses of œstrin but with no effect but 2 cases of menorrhagia in patients *thirty* years of age had much improved under progestin treatment

The preparations employed were supplied by Schering In the cases of amenorrhœa he had used progynon B oleosum *forte* The smallest dosage necessary in any case to produce a menstrual flow was 300 000 units the largest amount required in any one case was 1 250 000 units In menorrhagia of puberty the average monthly dose found necessary to control the menstrual flow was 10 international units. Most of the treatment had been replacement therapy little had been done in the direction of activating therapy using the pituitary hormones As regards permanency the results had been disappointing with the exception of menopausal pruritus, other climacteric symptoms and adolescent menorrhagia

The chief criticism of such a clinic Dr Hunter said was that one tended to be working in the dark with no certain knowledge of the underlying conditions Cases might be primary ovarian, or primarily due to pituitary deficiency but apart from clinical signs we had no methods of establishing a diagnosis He thought perhaps some help could be obtained by routine estimations of the basal metabolic rate and also perhaps of the blood hormone content For this a biochemical laboratory and a skilled staff would be necessary and it seemed to him that future progress was only possible along these lines.

The President expressed his interest in the results — Mr J E Stacey (Sheffield) asked whether Dr Hunter had discovered anything about what time in the cycle *these* hormones should be used Personally he had seen good results in pruritus vulvæ. He thought that many of the effects obtained by substitute therapy were got as the result of psychological influences —Dr F H Lacey (Manchester) asked whether Dr Hunter had ever compared the results in repeated miscarriages with those obtained from antisyphilitic treatment. His results in the latter had been very good and he used the treatment whether the Wassermann reaction was positive or not

In reply Dr Hunter said that in timing the treatment he had used Kaufmann s table but unfortunately they had not been able to afford the huge doses used by Kaufmann. In his opinion menstruation tended to carry on so long as there was any hormone secreted at all. He thought that secondary amenorrhœa was due to a sudden cessation of hormone production His series of repeated miscarriages had not had any history of syphilis In most of his cases there had been a history of scanty menstruation He believed that diet was a very important factor

Pseudomucinous Ovarian Cyst with Cystic Endometrium

Prof. D Dougal (Manchester) said that in the last few years he had met three cases with cystic changes in the endometrium associated with a pseudomucinous ovarian tumour The ages were 58 60 and 61 The first patient was single but the others were married and had borne children Each had a large abdominal cystic tumour and complained of a blood stained vaginal discharge In each panhysterectomy was performed and the tumour was a pseudomucinous cyst-adenoma In one patient an inoperable carcinoma of the descending colon was also present On opening each uterus after operation a quantity of blood-stained pseudomucinous material was found on the endometrium—raised up to form a number of thin walled cyst In two cases this was also found in the cervix

REVIEWS AND NOTICES OF BOOKS

Trachoma

By A F MacCallan, C B E, M D, F R C S, Surgeon in Charge of Out-patients, Westminster Hospital, London, formerly Director of the Egyptian Government Ophthalmic Hospitals Embodying a Hunterian Lecture at the Royal College of Surgeons of England, 1936 London Butterworth and Co, Ltd 1936 Pp 225 21s

Fifty years ago any worker at Moorfields Eye Hospital would have been confronted with many cases of this disease, for most of the infected immigrants into East London from the affected districts of Europe at that time found their way there, but to the younger generation of ophthalmologists in England the disease is practically unknown Only among those ophthalmic surgeons who have undertaken hospital duties in Egypt, Palestine, or the Far East are British "trachomatologists" now to be found

The natural evolution of trachoma was first described by MacCallan in 1905, when he was working in Egypt, as occurring in four stages These stages are now generally accepted and together with certain varieties which occur in Stage II are well described and illustrated with coloured plates in this book The early diagnosis of the disease depends in difficult cases on the detection of pannus This, which in the early days was apt to be regarded as only a later complication due to mechanical contagion from the heavily infected upper lid to the cornea, is described by MacCallan as a sign invariably present even in the first and second stages Unfortunately its presence or absence in early cases can only be verified by the corneal loupe or the corneal microscope with slit-lamp in skilled hands, this examination takes some time, so that where mass infection has to be investigated the method is impracticable It is, however, the only reliable criterion according to MacCallan, who attributes the infection of the cornea not to direct contagion but to slow and inevitable advance from the original site of infection in the conjunctiva of the upper lid As to treatment, detailed instructions are given, varying according to the stage and particular variety of the disease These display a great advance over the days when the almost universal panacea was the drastic and cruel copper sulphate stick

As to the pathology of the disease, a vast amount has of late years been published in support or in criticism of two theories of causation one that it is to be found in the so called Halberstädter Prowazek Körperchen (H P K) structures found to be included in the epithelial cells, the other and more recent one that it is due to an organism known as *Bacterium granulosis* discovered by the Japanese bacteriologist Noguchi Neither of these theories has been found to be capable of proof and knowledge of the ætiology of the disease remains incomplete

The latter half of this work is occupied with the epidemiology of the disease, its history, and a discussion of the prophylactic measures best adopted on the one hand for individuals living in infected areas and on the other to the schools &c, in areas where the disease has already or has always been endemic For a great part of the world the disease appears to be a universal scourge and there appear to be no natural conditions, either geographical or racial which by themselves can render any area immune At the same time no student of this book can regard the fight against trachoma as hopeless Great improvement has already followed from the systematic prosecution of prophylaxis under scientific guidance in Egypt, and a victory on a smaller scale is the elimination of the disease from our own poor law schools in England since segregation was adopted

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Pathological Physiology and Clinical Description of the Anæmias

By William Bosworth Castle, M.D, S M., Associate Professor of Medicine, Harvard University; and George Richards Minot, M.D, S D, F R C P Edin., Professor of Medicine, Harvard University Edited by Henry A Christian, A.M., M D, LL D, Sc.D, Hersey Professor of the Theory and Practice of Physic, Harvard University London Humphrey Milford, Oxford University Press 1936 Pp 205 15s

The pioneer work of George R Minot and William B Castle on Addisonian pernicious anæmia laid the foundation for an entirely new conception of the ætiology of a wide group of conditions associated with abnormalities of the hæmopoietic system It is therefore fitting that their review of the problem of the cause and treatment of the anæmias should be reprinted from the Oxford Loose Leaf Medicine in a form easily available to workers in medicine and allied sciences The short introductory chapter on the physiology of the erythron contains a stimulating account of the processes of blood production and blood destruction It illustrates well how much can be learnt of the processes of normal physiology by the exact quantitative study of pathological conditions as seen in clinical practice The hospital ward, in the hands of men like Minot and Castle, becomes a place in which as exact a science is practised as in the laboratory of the physicist or chemist In this monograph the authors give a concise description of diagnostic technical methods and an analysis of the significance of the reticulocyte response, but emphasise that "it is important to recognise clearly that meticulous descriptions of the peripheral blood in themselves often signify little without correlation with clinical syndromes and in particular with the chronology of proceedings symptoms and therapy"

The anæmias are classified on an ætiological basis as far as possible Congenital anæmias of infants, Cooley's erythroblastic anæmia, aplastic anæmia, the macrocytic anæmia of liver disease, and splenic anæmia are grouped together as idiopathic Macrocytic anæmia associated with liver disease and achrestic anæmia, they suggest, are not due to a derangement of the internal metabolism of the P A. principle, as is usually believed, but are dependent upon some, at present unexplained, depression of erythropoiesis Myelophthisic or leuco erythroblastic anæmia is regarded as due to mechanical interference with the blood forming organs The exposition of general principles of treatment is admirable in its clarity and the necessity of making a correct diagnosis before the blood picture is obscured by indiscriminate therapy is emphasised. Specific treatment is discussed under the headings blood transfusion, abolition of blood loss and increased blood destruction, administration of essential erythropoietic factors, elimination of toxic agents, X ray and arsenic treatment, and splenectomy Apart from general principles notes are also given on the special treatment of certain types of anæmia There is an excellent bibliography but a fuller index would have been helpful, for it is book that will be used for constant reference as ell as read as a whole for the picture it gives of he principles underlying the modern diagnosis nd treatment of the anæmias.

The 1936 Year Book of the Eye, Ear, Nose, and Throat

By E V L BROWN MD Professor LOUIS BOTHMAN MD Assistant Professor of Ophthalmology GEORGE E SHAMBAUGH MD Clinical Professor Emeritus ELMER W HAGENS MD Assistant Clinical Professor and GEORGE E SHAMBAUGH, Jun MD Clinical Instructor in Otolaryngology University of Chicago Chicago: The Year Book Publishers London: H K Lewis and Co Ltd Pp 632 10*s* 6*d*

THIS issue consists of abstracts from the current literature excellently edited and well written by the same authorities who have undertaken the task in recent years Editorial comment is not withheld and critical attention is given to therapeutic claims For example the treatment of otosclerosis by local injection of thyroxine is discussed in connexion with the late Dr Albert Gray s original claim to have obtained seven cases of improved hearing among fourteen patients by the use of this method The editors have tried the method in a few cases using the audiometer to test the hearing and have found in no instance any significant alteration in the hearing If the audiometer tests are made by a technician the results are comparatively free from errors which are almost bound to arise with the whisper test. They say *that with the slightest* encouragement each patient would have declared that the hearing seemed improved and they believe that it is this psychological element in deafness which is responsible for the continued vogue of all kinds of methods in the treatment of otosclerosis In this connexion they quote a report by H C Ballenger and B A Patterson who treated 25 partially deaf patients with an instrument similar to but apparently not identical with that of Zünd Burguet using the 2 A audiometer to follow the acuity of hearing. In only five patients was there any improvement: in two of these it was so slight as to fall within the normal range of variation in one treatment began three weeks after an acute suppuration and the remaining two were cases of chronic catarrhal otitis in which spontaneous improvement is more likely to occur than in otosclerosis or nerve deafness A number of abstracts are given concerning petrositis which has recently attracted much attention

Much interesting work has been published during the year under review on diseases of the nose and throat, including Henri Coutard s recent report on the results of treatment of cancers of the tonsil pharynx and larynx by X rays according to his own method. The best five year results of 32 per cent were obtained in the tonsillar region tumours of the larynx gave 26 per cent and of the hypopharynx 11 per cent. The editors point out that a new era has been opened up by Coutard s work five-year cures are being obtained with gratifying frequency in cases previously deemed hopeless the indications for surgery are being narrowed to intrinsic carcinomas of the larynx and to a few early lesions el ewhere

With regard to diseases of the eye a useful collection of abstracts on glaucoma includes a long illustrated article by C Berens describing his operation of iridocorneosclerotomy for the relief of this disease In a study of optic nerve atrophy in relation to pituitary tumour F Fischer finds temporal pallor of the disc the most frequently observed alteration in the nerve head; he also finds that this pallor remains unchanged no matter how good are the results of operation an observation not in accord with the findings of other authors A number of rare neoplasms of the choroid are described and E Hesse reports a favourable result in the treatment of methyl-alcohol amblyopia by repeated lumbar puncture as a result of prohibition this affection was far commoner a few years ago in the United States than in England.

The book is provided with a good index and is indispensable to those who want to keep track of progress in these specialties

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Chronic Indigestion

By C J TIDMARSH MA MD FRCP (C) Associate in Medicine Royal Victoria Hospital Montreal. London: Longmans, Green and Co Ltd 1936 Pp 143 6*s*

THIS small handbook is described on its yellow and red wrapper as "a layman s handbook above the title is written with a large question mark Are you one of the 10 per cent ? and beneath is the alarming announcement ten per cent of all people are affected by ulcers of the stomach. Whether such a statement is precisely accurate is of less importance than the effect such information may produce upon the reader Books designed as this one is for both patient and physician have the object *of helping the patient to take an intelligent* interest in his case, and thus to secure his coöperation but they tend as a whole rather to encourage a morbid preoccupation with symptoms Peptic ulcer is however one of the conditions in which the patient s coöperation is all important and where the physician feels the need of written instruction to supplement his verbal ones Dr Tidmarsh s little book shorn of its cover should serve the purpose His teaching is sound and he gives useful advice as well as timely warnings against incautious treatment Physicians may themselves find a use for this book as a summary of the problems of chronic indigestion. The chapters on nervous indigestion and the unstable colon are especially good.

Hay Fever

With Special Reference to Treatment by Intranasal Ionisation. By CLIVE SHIELDS B.M. B Ch Oxon. Clinical Assistant Physiotherapy Department, St. George s Hospital. London: Humphrey Milford Oxford University Press 1937 Pp 57 7*s* 6*d*

IN this little book the author argues the superiority of intranasal zinc ionisation over other methods in use for the treatment of hay fever He does not describe the technique of desensitisation by pollen extracts he does not mention the galvanocautery and he condemns without reserve all kinds of palliative local applications Records have been kept of the previous treatment received by his patients from which Dr Shields has drawn up a table showing that 82 per cent of those who had had desensitising injections and 100 per cent of those treated by cauterisation had experienced no relief It is *not* surprising that a large proportion of his patients are people who had failed to get relief from other methods the figures are of no value in assessing the *results of these methods* The technique recommended is similar to that used by other workers three treatments of 8–10 mins at weekly intervals, with a 2 per cent solution of zinc sulphate, and a maximum current of 3 milliamperes for the first treatment, 7 milliamperes for the second, and 15 milliamperes for the third Dr Shields very properly lays stress on the importance of careful application of the zinc moistened gauze to the upper and back part of the nares, and on the avoidance of necrosis by the use of small doses of current He says he obtains 90 to 100 per cent of relief in 93 per cent of cases, whereas other observers have been content to claim 66 to 80 per cent The method is a useful one, and it is probable that those who have had bad results from it have employed a faulty technique or applied the packing unskilfully But the value of this book is impaired by over emphasis on the merits of one form of treatment to the exclusion of all others

Synopsis of Diseases of the Heart and Arteries

By GEORGE R HERRMANN, M.D , Ph D , Professor of Clinical Medicine, University of Texas London Henry Kimpton 1936 Pp 344 17*s* 6*d*

THE systematic consideration of heart disease in this book opens with a discussion of the study of a patient suspected of heart disease This section, specially in its dealing with symptomatology, is one of the best in the book, although the list of possible findings in examination is rather too exhaustive In classifying morbid conditions of the heart the outlines approved by the American Heart Association have been followed, and diagnosis is considered from ætiological, structural, and functional standpoints in turn When it is remembered that many patients seeking advice for troubles apparently cardiac have no disease but only a functional disturbance of the heart or its nervous mechanism, it is surprising that more systematic consideration is not given to this group, which includes the very common left mammary pain, nervous tachycardia, and suspirious as well as the effort syndrome Dr Herrmann has compressed a great deal of information into a relatively small space Many useful diagrams and charts have been included, together with good photographs of morbid anatomy and microphotographs Much attention to important detail has been given in therapeutics and management in heart disease and failure But the volume is hardly as comprehensive as the title would suggest because the discussion of peripheral vascular disease occupies only nine pages The value of future editions would be much enhanced by an elementary treatment of the symptoms and signs of the common forms of arterial disease , a precise account of the reactive hyperæmia test, for example, is of far greater importance than a picture of the Tycos Dermatherm

Diseases of the Nails

By V PARDO CASTELLO, M D , formerly Assistant Professor of Dermatology University of Havana London Baillière, Tindall and Cox 1936 Pp 178 16*s*

THERE will be no two opinions on the merits of this little volume, and few will read it without profit to themselves and a measure of gratitude to a painstaking and able writer The subject of this book, owing perhaps to the poverty of our therapeutic armamentarium, has been neglected too long, and even the trained dermatologist, "often at a loss to make a diagnosis," as Howard Fox remarks in his foreword, has been apt to underestimate its importance, both in his clinic and in the lecture room A further obstacle to study is the involved nomenclature, mainly Greek in its origin, and therefore antagonistic to all but those of us who succeeded in reaching the "Vth form on the classical side" Dr Pardo Castello will be found to have made things very easy for the reader , he has a lucid and most attractive style Two simple diagrams clarify in the ungual anatomy what has always appeared rather complicated. These diagrams should be carefully studied and memorised, or redrawn from memory, because constant reference to the parts depicted—i.e , nail bed, matrix, nail root, lunula, and so forth—is made in the seven succeeding chapters These deal with affections peculiar to the nails, dystrophies, congenital affections, the effects of cutaneous and systemic diseases, occupations, and poisons An extensive and carefully selected bibliography will stimulate the interested reader to further study or research, and the 94 clinical illustrations will be found invaluable The treatment of nail diseases by X rays is considered specially in a final chapter A word of warning is appropriate here The value of radiotherapy is considerable, but in the hands of the inexpert it has inflicted irreparable damage in just this type of case

A Textbook of Physiology

For Medical Students and Physicians Thirteenth edition By WILLIAM H HOWELL, Ph D , M.D , Sc D , LL D , Emeritus Professor of Physiology in the Johns Hopkins University, Baltimore London and Philadelphia W B Saunders and Co , Ltd 1936 Pp 1150 30*s*

THE general scope and character of this excellent text-book were recalled in these columns when the twelfth edition appeared in 1934. The thirteenth edition bears the brief legend "thoroughly revised," and has a preface which does not enlarge upon this text except in an impersonal way The author disdains to act as his own commercial traveller, or to display self pity at the magnitude of his task, which has been conscientiously performed The changes which have taken place in our knowledge, for instance, of the vitamins, the hormones, the autonomic nervous system, and the cerebrum, all find a place, and the sections describing them seem to fit naturally into the text Less space is devoted to the properties of reflexes and a little more to the anatomy of the nervous system than is customary, and the chemistry of the foodstuffs needs supplementing by reference to a biochemical text book, but these can hardly be called defects One of the main features of the book is its convenient size , no part of the subject is neglected and the balance has been maintained with skill The style is straightforward and the exposition clear , the size of the book prohibits very detailed discussion, but accuracy is not sacrificed to clearness *It must be borne in mind by the student that the text book comes from the other side of the Atlantic, and he may find the emphasis and arrangement unfamiliar in one or two places* But it contains practically all he requires in a small compass, and avoids many of the usual defects of a short book *It is adequately but not profusely illustrated, well indexed, and has a useful detailed table of contents showing the subdivisions of the chapters and the pages on which they occur*

THE LANCET

LONDON SATURDAY FEBRUARY 20 1937

THE ADOLESCENT IN INDUSTRY

ANY medical man who was fortunate enough to hear the two-days' debate in the House of Commons on the second reading of the Factories Bill must have been impressed by the desire in all parts of the House to ensure the healthiness of industrial life, and especially to protect the worker of tender age. But he could not fail to have been also impressed by the scarcity of scientific or medical data on which to base a reasoned judgment on the proposals before the House. What is the effect upon the adolescent of long hours or of night-work? What are the precise conditions under which young persons of either sex can play their part in industrial life without risk to their present health or future development? It must be admitted that scientific medicine can give no categoric reply to these questions. They cannot be answered in terms of established disease and defect, and despite the pioneer work of the Industrial Health Research Board and of the London School of Hygiene a start has hardly been made in the biology of healthy industry, for there has been next to no opportunity for continuous medical supervision from the inside. And in any case the problems of industrial health are economic as well as medical. Nevertheless there are biological principles known to medicine which can only be neglected at our peril. We are aiming at a healthy industrial life for the adolescents, and the *hygienic conscience* cannot be stifled by the lack of evidence that illness is being caused by this or that process or time-table. If the Factories Bill does nothing more than establish conditions which will not cause manifest disease, most of the effort expended in the campaign for physical fitness and much of the work of the Ministry of Health and the Board of Education will be sterilised.

There are at present some 600,000 young persons of 14–18 years of age working in factories, not counting those in unregulated employments. Under the new Bill, as drafted, boys and girls under 16 years of age may work 48 hours a week but not longer; furthermore the Secretary of State can by regulation prohibit or limit overtime for juveniles of 16–18 "in any process in which overtime can be shown to be prejudicial to their health." We shall all agree that these provisions are an advance on existing practice, but medical men will ask whether, except in rare and extreme cases, it will be possible to demonstrate the "prejudice to health" which overtime or night-work may cause. Neither young workers nor, as a rule, their parents desire that overtime should cease; experience shows that the incentive of the added pocket money is apt to outweigh all other considerations. Any ill effect which long hours or lack of sleep may have upon the health of these juveniles will not become apparent until after they have become adults and the law has ceased to apply to them—when it will be too late to amend the error. For example, BRADFORD HILL in his studies of sickness amongst operatives in Lancashire spinning mills says: "There is no evidence of an excess of respiratory illness amongst younger workers who have only worked under modern conditions (except perhaps in the higher rates of single women 25–29)," but he adds, "this is not conclusive that modern conditions do not cause respiratory illness, since it may be that some years' exposure is necessary before the effect of the environment will be shown in absence from work due to illness." Again R. M. FLEMING, speaking of the adverse influence of certain environmental conditions upon the physical and psychological development of adolescents, says: "The adverse effect of an improper midday meal was not immediately apparent, but its effects were cumulatively felt, so that a second year of such conditions reflected itself in stunted growth." It has been urged that overtime or night work need not affect nutrition. Medical experience suggests that they do affect nutrition in a variety of ways, and in any case nutrition is only one of the many environmental and physiological conditions which together determine the adolescent's health and development. School medical officers have observed and recorded the harm done by lack of sleep upon growing children. Wise parents and family doctors are very familiar with them. If it is asserted that it is harmless for juveniles of 16–18 to work at night or to exceed the usual working hours, medical men will be cautious of agreeing with the assertion. It is true enough that the effects may be difficult to demonstrate. It is hard to tell what the young person would have been like in a different environment—although comparison may fairly be made with those in public schools or with continuation class groups—and the effects may not be manifest until early manhood. The years 16–18 are an important part of the formative period of adolescence; they include the latter end of the "second period" of rapid growth which FLEMING has so carefully studied. Mistakes in this period are irretrievable.

If it is really necessary that young persons should work either at night or overtime it appears that there is less danger in allowing *young girls* (between the ages of 16–18) to do this kind of work than in allowing youths of the same age to do it. At the age of 14–16 girls, as MORGAN ROCH of Harvard has pointed out, are more mature than boys. From 16–18 years, and over, most youths are growing with greater rapidity; for girls the period 11–16 years is determinant. Biologists like W. VON GONZENBACH of Zurich have emphasised the necessity of minimising the external life-changes during the pressure of internal change which takes place during puberty if physical or mental disturbance is to be avoided. "To postpone to 15 years the entry into industry is not," he says, sentimental philanthropy but biologically well-founded economics These are a few of the medico-biological considerations to be taken into account by legislators There remains the recent sinister increase in juvenile accidents, which suggests that some cumulative strain is already in action, and the admitted strain which even normal hours of work may throw upon the young persons in occupations where there are loads to be lifted And we are unaware of any systematic research to assess the effects of two- or three shift systems upon the development of young people

The positive evidence of the *good* effects of properly regulated employment for the age group 16–18 should not be forgotten, and it is undoubtedly possible to combine wage earning with education in a way that fulfils the chief needs of many boys and girls The reports of the continuation schools at Rugby and York and Birmingham could be re read with advantage But it seems to us that anyone who employs young people must be able to show that the conditions are reasonable and we should regard night-work as guilty until proved innocent rather than innocent till proved guilty Whatever may be the economic pressure on juveniles for night-work, for overtime, or for two shift systems, it must be resisted in view of the medical evidence—even if this does not amount to proof—that such kinds of work between the ages 16–18 are biologically unsound They must be unsound, because they are likely to interfere with the normal processes of growth Happily it is not for the medical profession to decide between the rival claims of economics and health, its task is to state the truth so far as it is able to do so, and on the evidence available to it On this evidence, as it at present stands, overtime and night-work are not to be tolerated for adolescents, and we hope that Parliament may be persuaded to amend the present Bill so that, for those under 18 years old, the 48 hour week is exchanged for a maximum of 40 hours employment with 7–8 hours' education and recreation

VASCULAR SPASM AND ASTHMA

THE distribution and function of the bronchial arteries has long been a matter of interest to Prof I DE BURGH DALY and his colleagues They were led to its study in their search for the method of vascular adjustment in the lungs, the contractility or otherwise of the pulmonary arterioles and capillaries being in dispute For practical reasons, indisputable information about the behaviour of the pulmonary vessels can be obtained only from a preparation of isolated lungs, and Prof DALY felt that preparations of this sort in the past had perhaps lacked something vital in the shape of a blood supply through the bronchial arteries An analogy would be a preparation of the surviving heart in which a perfusion of the coronary circulation was omitted Perfusion of the bronchial arteries as well as the pulmonary did, in fact, reopen the whole question of vascular control in the lungs The pulmonary circulation was now found responsive to nerve stimulation, whereas before it had been inert Vasoconstriction and vasodilatation were readily demonstrable This was attributed to survival in the lungs of nerves which in previous experiments had quickly perished from ischæmia of the tissues in which they were embedded Since histological and anatomical studies show that the bronchial vascular system supplies every tissue of the lungs except that part of the respiratory tract distal to the respiratory bronchioles, it may be assumed that this explanation is the true one The correlation of an active pulmonary vascular bed with the rest of the circulation raises many problems and offers wide opportunities for speculation [1]

Quite a different point, of immediate practical importance, has also been raised by Prof DALY [2] The bronchial arteries supply not only nerves but the bronchial muscles themselves Interference with the circulation might therefore affect these directly or indirectly, and a new ætiological possibility is opened up with regard to asthma Is asthma sometimes due to vascular spasm or disease? The answer to this question is not to be found in the laboratory The most the physiologist can do is to demonstrate the effect on bronchial movement of interfering with the bronchial arteries, and so bring a prima facie case The final investigation must be made at the bedside and in the post-mortem room, and few will dispute the urgency of beginning this at once Prof DALY has pointed to the first path to be followed "To us," he states, "it is becoming increasingly clear that there should be a wider histological examination of the bronchial arteries in all pulmonary cases which come to post mortem examination, for it is only by this means that we shall be able to obtain information as to whether the suggestive physiological experiments I have described are of significance in relation to the control of intrinsic mechanisms of the lungs during life" Those who doubt the significance of these experiments will realise the importance of justifying their scepticism by tangible evidence, and we commend the suggestion of examining bronchial arteries post mortem in pulmonary cases to the attention of morbid anatomists Fortunately uncomplicated asthma rarely leads to death, but a good deal of relevant information must surely be obtainable from fatal cases where asthma has been part of the history

INTESTINAL ADSORBENTS

IN the Far East kaolin or china clay has probably been used for many centuries in the treatment of intestinal complaints PÈRE DEUTRECOLLE, the Jesuit missionary to whom we owe much of our knowledge of the Chinese potter's technique in its later but still golden period, writing in 1712 mentions its employment for the relief of diarrhœa Of late years it has been established in Western therapeutics, mainly on a basis that must be admitted to be highly speculative That fuller's earth kaolin and other silicious earths are—to use the modern term—adsorbents may be looked upon as a very ancient discovery since their properties as cleansing agents and decolorisers and even their capacity for taking glazes when baked, depend upon their adsorptive powers But it is only with the growth of modern colloidal chemistry that the precise conditions under which adsorption operates have been defined Kaolin, for example which consists mainly of SiO_2 has powerful and very general adsorptive powers, particularly in an acid medium (In alkaline media it is almost inactive and the elution of already adsorbed material may even be brought about by alkali) It is argued that such a material taken by mouth should serve to remove bacterial toxins and other undesirable toxic matter from the intestinal canal but if we stop to define the terms of the argument we find ourselves asking What are the bacterial toxins in question ? What part do they play in the production of disease ? Do they in fact exist ? To none of these questions has a satisfactory answer yet been given and as Dr E S **Emery** of Boston says in his excellent review[1] the physician who uses adsorbents is entering a field of therapeutics in which the pitfalls are not clearly indicated and the usefulness of which has not been definitely defined

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[1] Harvey Lectures 1935 36 Baltimore, p 235

[2] *Trans med-chir Soc Edinb*, 1936 p 130 (*Edinb med J*)

Powerful adsorbents such as kaolin are double edged weapons and in our efforts to combat the still quite hypothetical condition of alimentary toxæmia we are introducing substances that almost certainly will exercise their adsorbent capacity indiscriminately on enzymes mucus foodstuffs and vitamins and so interfere in an unpredictable way with the delicate mechanisms of nutrition. Further we must remember that we are administering a material which ordinary sense suggests is unsuited to the digestive apparatus it is abrasive and completely non-digestible and it is capable of forming insoluble concretions in the body It is possible moreover that it may be phagocytosed or otherwise lodged in the cells of the alimentary tubes Be this as it may **Emery** points out that kaolin has not escaped criticism in actual therapeutic use Intestinal irritation and inflammation partial intestinal obstruction and even perforation have been ascribed to kaolin treatment and **Hoelzel** has reported the production of intestinal polyposes in rats by treatment with large doses Even these considerations by no means exhaust the difficulties Such precise knowledge as we have of the process of colloidal adsorption is based on the study of comparatively simple systems in vitro and from this knowledge it would be impossible to predict what will happen in the complex and changing environment of the alimentary canal where the hydrogen ion concentration is variable and where there are so many substances useful and useless to the body competing for adsorption There is the further difficulty that adsorbing agents can only be kept in a state of maximum activity under carefully arranged conditions they readily adsorb gases &c and so have their adsorptive activity destroyed or impaired One might ask for example how far their efficacy is affected by any liquid such as oil which may be used as a suspension medium

The question of the action of adsorbents on the intestinal flora is an interesting one, and lends itself to precise study **Braafladt** in 1923 noted that kaolin will adsorb and inactivate large quantities of bacteria Dr W **Smith** on p 438 describes how he has investigated in vitro the action of adsorbents on the flora of the human fæces, and has found that kaolin and in particular kaolin alumina mixtures if given in adequate quantities remove bacteria including *Bacterium coli* almost entirely from suspensions of fæces, as judged by plate-counts of the fæces before and after adsorption This is in itself an interesting observation but it must be related to **Braafladt**'s statement that in the living human being kaolin treatment brings about a change from a proteolytic to an aciduric intestinal flora Allowing that *Bact coli* may be suppressed or replaced by an acidophilic flora in the living subject it by no means follows that any good has been done by the process So far as we know we have lived on relatively good terms with our intestinal flora for countless generations and to any one impressed by the beautiful equilibria of the normal human body it would seem unwise to interfere with them without due forethought That we are being constantly poisoned by our intestinal contents is one of those largely irrational beliefs that must have its roots deep in human nature The address by Prof **Witts** at the front of our present issue is one that we are especially glad to publish because he is attacking one of the major errors of current practice

MINERVA

We have before us[1] in one volume the directory of universities and professional schools in every part of the world compiled by Dr Gerhard Lüdtke with editorial guidance from Dr F Richter For thirty editions this Yearbook of the Learned World contained within the same cover not only this information but similar details of research institutes observatories libraries archives museums and much else Running as it did to 4345 pages it had to be bound in three volumes with consequent loss of some of its time honoured ease of reference The editors of Minerva then decided to carry through the cleavage with the result that the more mobile part of the learned world has its own section which has been kept up to date and reissued at short intervals That is a great convenience for all who have occasion to identify the position of some member of a teaching school in a university or medical school however remote There is rather a disturbing doubt expressed in the preface whether it is physically possible to bring together and to revise such wide spread material ; but it has been done and its success is a testimony to the publisher's love of science in general and of this task in particular We are glad to recognise the public spirit of those who have again produced such a worthy book.

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[1] J Amer med Ass. Jan. 16th 1937 p 203

[1] Minerva: Jahrbuch der Gelehrten Welt. 32nd edition Section Universities and High Schools Berlin and Leipzig Walter de Gruyter and Co 1936 Pp 2201 RM 45

ANNOTATIONS

AN ELECTRON MICROSCOPE

THE term "electron microscope" is used to describe an instrument in which a cathode beam is utilised as the source of energy, much as light is used in the ordinary microscope. There is this important difference that whereas ordinary light can be refracted and an image be formed of an object by a lens or a system of lenses, cathode rays cannot be so refracted. What corresponds to a lens system in the electron microscope is a magnetic field by means of which cathode rays may be focused and an image obtained of a suitable object on a fluorescent screen or photographic plate. The pioneers in the construction of instruments of this kind were Knoll and Ruska in Germany, who utilised methods already in use for cathode rays oscillography. In the January number of the *Journal of Scientific Instruments* a new electron microscope is described. It has been made by Metropolitan Vickers Electrical Co., Ltd., in collaboration with the optical department of the Imperial College of Science. As a beam of electrons may be regarded as light of very short wave-length, and as resolution in the microscope is mainly dependent on the wave length of the light used, it follows that the efficiency of such an instrument is theoretically in proportion to the increased frequency of the radiation used. In the instrument here referred to this would mean that the possible optical limit might be as much as 1000 times greater than with any microscope using visual light. The application of this method to any problem in medical research may be remote. There is much still to be done on the physical side and, as in all advances in microscopy, a new technique will have to be developed in the preparation of material to enable even preliminary experiments to be conducted with any promise of success. How important this factor may be is perhaps indicated by the progress made in using ultra-violet light in microscopy. Objectives for using some wave lengths in the ultra-violet region have been in existence for at least thirty years, but it is only comparatively recently that their use in biological problems has been fully exploited. Even now the complete utilisation of that part of the ultra-violet spectrum which is transmitted through air has not been achieved. The electron microscope is an interesting development in physical method, and its future will be watched by all those interested in any possible developments in microscopy. This at least can be visualised, that the microscope of the future will not be a bench tool, it will be an instrument of precision dependent for its development on the utilisation of radiation, using that term with its full physical meaning.

FLUID LOSS IN INTESTINAL OBSTRUCTION

AMONG the factors that have been blamed for the condition of shock associated with intestinal obstruction is diminution of effective circulating blood volume, due to fluid loss into the tissues and vessels of the obstructed loops. Ian Aird[1] has investigated this factor by experiments on cats, which include simple obstruction of the bowel lumen, obstruction combined with distension of the gut, and venous strangulation. The gain in fluid by the obstructed intestine was measured by comparison of its weight with that of an equal length of normal intestine, Aird concludes from the results that only in venous strangulation of considerable lengths of intestine is the diminution of the volume of circulating blood sufficient to be dangerous to life. A massive strangulation is found clinically in volvulus (particularly in the extensive volvulus of the new born child which is associated with abnormal fixation of the intestine) and in thrombosis of the mesenteric trunks. Simple obstruction by ligature or closed loop occlusion (double ligature) caused losses of fluid that were on the whole insignificant. Comparison of a piece of intestine twelve inches in length, excised immediately above an occlusion, with the twelve inches taken from immediately below showed that the gain in weight of the former did not amount to more than 5½ per cent. of the total blood volume. In a loop of intestine isolated by double ligature the gain in weight was 11 per cent. The effect of distending the isolated loop with air is to cause pronounced congestion, and the accumulation of blood and œdema fluid is much greater than in simple obstruction. In experiments involving one half of the small intestine the gain in weight represented one third of the volume of the circulating blood. Strangulation was studied by inserting a loop of gut into a rubber bag and tying a ligature round the neck of the bag till the mesenteric pulsation was just palpable. The blood entering the loop has no exit by the obstructed veins. Fluid accumulates in the wall of the gut and is poured out into the bag. A lateral anastomosis was formed outside the bag between the entering and returning loops. One third or more of the blood volume can be lost by strangulation of lengths representing a third or more of the small intestine. It has been calculated that the maximum volume of blood that can be thus shunted into the vascular bed and wall of the intestine in gross congestion and distension of the intestine is in the region of 50 to 80 per cent. It is obvious that such a result of massive strangulation is sufficient to account for death without the intervention of other factors such as toxæmia and nervous stimulation which operate in less extensive lesions.

RIGHT-SIDED AORTIC ARCH

ONE result of abnormal development of the aorta is the rare right-sided arch, which curves over the right lung root and passes backwards to the right of the trachea and œsophagus instead of to the left, and then usually crosses to the left behind the œsophagus. During life the condition can only be recognised radiographically, and Dr. Evan Bedford and Dr. John Parkinson are able to give an account[1] of it illustrated by beautifully clear radiograms. Two main types have been differentiated according to whether the left subclavian artery passes in front of or behind the œsophagus after arising from the aortic arch, and they give characteristic pictures. In the anteroposterior view the ascending aorta is abnormally prominent though of varying outline, while there is an absence of the usual knob on the left, the barium swallow shows the œsophagus to be indented on the right instead of on the left. In the first oblique (right anterior oblique) position the picture is usually distinctive, the œsophagus being acutely dislocated forwards by the aortic arch, though this change may not be apparent in the first type. The descending aorta is sometimes visible on the right of the cardiac shadow, and it may be tortuous Other congenital defects—especially Fallot's tetralogy—are often associated with a right-sided arch and the appearances peculiar to them will then be added The symptoms which are not constant, are the result of local pressure and are likely to lead to suspicion of growth intrathoracic goitre or aneurysm Bedford and Parkinson's study is based on 11 cases and attention to the points they raise should lead to correct diagnosis of this interesting congenital anomaly

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[1] *Edinb. med. J.* January, 1937, p. 28.

[1] *Brit. J. Radiol.* December, 1936, p. 776.

THE ROUTE OF INFECTION IN POLIOMYELITIS

Most authorities hold that the portal of infection in poliomyelitis is the nasopharynx—at any rate in the great majority of cases—and that the virus reaches the central nervous system by passing along the olfactory nerves after which its spread to the cord is axonal. Briefly stated the evidence in support of this conception is as follows The virus of poliomyelitis is highly neurotropic nerve-cells are essential for its multiplication In poliomyelitis the virus is found in the nasopharynx and in the central nervous system it does not appear in demonstrable quantity either in the blood or in the cerebro-spinal fluid If monkeys are infected by the cerebral route and the course taken by the virus in its spread thence to the anterior horn cells is followed as Fairbrother and Hurst[1] and Faber and Gebhardt[2] have followed it the evidence obtained suggests axonal spread And lastly if the olfactory bulbs are destroyed then, as Schultz[3] has shown the monkey becomes insusceptible to infection by the nasal route Recent work by A B Sabin and P K Olitsky[4] provides an important addition to this evidence They argued that if the virus reached the central nervous system by way of the olfactory nerves one might expect the olfactory bulbs to be the seat of early and constant change and they carried out experiments to see if this was so Working with the M V strain of virus and having ascertained the dosage necessary regularly to infect monkeys via the nose they studied the olfactory bulbs in animals so inoculated. The first rise of temperature in their infected monkeys occurred 4–6 days after inoculation paralysis appearing in another three days In monkeys killed and examined on the fourth day the outer layers of the olfactory bulbs showed diffuse infiltration with polymorphonuclear leucocytes mononuclear cells and lymphocytes, and the mitral cells were frequently necrotic At this time lesions were present in the mesencephalon and pons but were absent from the cord Later when paralysis had supervened the changes in the olfactory bulbs were more conspicuous and well-developed cuffing of the vessels was observed Lesions of varying extent were found in the olfactory bulbs in every one of 18 monkeys infected by the nasal route They were absent in 13 monkeys infected by other routes, such as the cerebral subcutaneous ocular or sciatic It is noteworthy that Sabin and Olitsky only found lesions in the olfactory bulbs in one of three monkeys infected by intravenous injection Lennette and Hudson[5] produced evidence that destruction of the olfactory bulbs protects the monkey against infection with poliomyelitis virus given intravenously They thought that virus introduced into the circulation reached the central nervous system by being excreted on to the nasopharyngeal mucosa and then passing inwards along the olfactory nerves but the experiments of Sabin and Olitsky seem to show that this is not always so The work of Sabin and Olitsky does not merely give additional support to the theory of axonal spread; it goes some way to answer the question of the importance of the nasopharynx as the portal of infection in human poliomyelitis If experimental poliomyelitis in the monkey is comparable to the human disease, then a study of the olfactory bulbs should tell us how often the virus enters the body by the nasopharyngeal route Apparently there are very few observations on the incidence of lesions in the olfactory bulbs in poliomyelitis and this gap in our knowledge will surely be rectified at the first opportunity

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[1] Fairbrother R W, and Hurst E W (1930) *J Path Bact* 33, 17

[2] Faber H K and Gebhardt L P (1933) *J exp Med* 57 933

[3] Schultz E W and Gebhardt L P (1934) *Proc. Soc exp Biol* N Y 31 728

[4] Sabin A B and Olitsky P K (1937) *J Amer med Ass* 108 21

[5] Lennette, E. H, and Hudson N P (1935) *Proc Soc exp Biol*, N Y 32 1444

BASOPHIL CARCINOMA OF THE PITUITARY GLAND WITH CUSHING'S SYNDROME

Although primary tumours of the anterior lobe of the pituitary gland often invade surrounding structures they very rarely give rise to metastases to remoter parts. Prof. Cohen and Prof. Dible[1] now report a case of Cushing's syndrome in association with a metastasising basophil carcinoma, and this is probably the first of its kind to be recorded The patient was an unmarried woman of 50 and the clinical disturbance referable to the pituitary tumour began seven years before death Examination about eighteen months before death revealed the characteristic clinical features of the syndrome According to the authors all features were present except polycythæmia but analysis of previously recorded cases shows that this is a questionable element of Cushing's syndrome. Of the other characteristic features all but amenorrhœa and obesity seem to have been clearly established. Amenorrhœa in a woman of 48 even though unattended by any conspicuous menopausal symptoms, is of course of doubtful significance the obesity seems to have been transient Biological examination of the urine for sex hormones yielded completely negative results Treatment of the pituitary region with X rays was followed by an improvement which lasted for a little over a year but relapse then rapidly led to death. At necropsy the pituitary gland was greatly expanded by a lobulated basophilic tumour of the anterior lobe Cohen and Dible's statement that the hyaline change described by Crooke in the cytoplasm of the basophil cells was not found in their case is not, as might at first appear, a refutation of Crooke's observation Their description is confined to the tumour cells they do not describe the appearances of the basophil cells in such remnants of the anterior lobe as may have been present in their preparations According to Crooke[2] this change is always found in the basophil cells of the anterior lobe proper and only occasionally in the cells of any tumour In this connexion it is noteworthy that Rasmussen[3] has lately confirmed the presence of this hyaline change in three additional cases of Cushing's syndrome The first was in a woman aged 27 who had a large not definitely basophilic tumour of the anterior lobe The second in a woman aged 44 is remarkable in that no tumour was found either in the pituitary or suprarenal bodies there was no hyperplasia of the suprarenal cortex The third, in a boy of 13, was associated with a suprarenal carcinoma which had metastasised to the lymph nodes and liver Rasmussen also confirms the extreme rarity of these hyaline changes both in normal glands and in glands from patients with hypertension

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[1] Cohen H and Dible J H (1936) *Brain* 59 395

[2] Crooke A C (1935) *J Path Bact* 41, 339

[3] Rasmussen A T (1936) *Endocrinology* 20 673

HISTAMINE AGAIN

ON the assumption that histamine may be responsible for the increased permeability of the vascular bed in congestive cardiac failure, G S Barsoum and Prof F H Smirk[1] using the method of Barsoum and Gaddum[2] estimated the quantity of "histamine yielding substance" or H Y S in the blood of normals and of patients suffering from this type of heart failure They present the following evidence that H Y S is identical with histamine

(1) H Y S , like histamine, is inactivated by histaminase

(2) H Y S fails to cause a contraction of isolated guinea pig's ileum which has previously been desensitised to histamine (but not to other materials which can cause its contraction) by exposure to a high concentration of histamine Similarly, the H Y S will desensitise the guinea pig's ileum to histamine

(3) Equal doses of histamine and H Y S will cause equal contractions of isolated guinea pig's ileum and equal falls of blood pressure in anæsthetised dogs

They found that the H Y S in the whole blood of eight normal humans varied between 0·05 and 0 11 γ per c cm with an average of 0 08 In congestive cardiac failure this amount was increased to 0 08–0 30 with an average of 0 25 γ per c cm — a concentration sufficient to cause flushing of the skin, reduction of blood pressure and histamine headache in normal people By separating the cells and plasma immediately after bleeding the patients, they found that in twelve normals the plasma H Y S averaged about 0·008 γ per c cm , while the red cell H Y S averaged 0 15 In fourteen patients with congestive cardiac failure the plasma H Y S and the H Y S of œdema fluid were normal, but the red cell H Y S averaged 0 46 γ per c cm , varying between 0 08 and 1 00 The H Y S in the cells is inactive until liberated by laking , for unlaked rabbit's cells, which are rich in H Y S , had no action on injection into a cat, whereas an equal quantity of laked cells produced a substantial fall of blood pressure This explains why the raising of the *whole blood* H Y S found in heart failure does not cause symptoms The investigators conclude that it does not account for the increased vascular permeability

In a further communication[3] Barsoum and Smirk demonstrate an increase in the H Y S content of the venous plasma during the phase of reactive hyperæmia following stoppage of the circulation of the arm for 10–30 minutes An increase in the H Y S of the red cells under these conditions is also demonstrated In contrast with these results, Barsoum and Prof J H Gaddum[4] give as normal *blood* histamine, using their method, a range of 0 027–0·05 γ per c cm in five subjects with an average of 0 035—substantially less than the results obtained by Barsoum and Smirk using the same method On the assumption that histamine shock and the shock due to burns are similar, and ignoring the possibility that any increase in the blood histamine may be due to an increase in the concentration of the red cells in the blood, they give results for nine patients with burns which they summarise in the statement that "extensive cutaneous burns cause in man a large rise of blood histamine at about the time when secondary shock is liable to develop " This statement suggests that there may be some relation between the shock and the blood histamine level Their maximum figures for whole blood in five cases described were 0 12, 0 16, 0 20, 0 22 and 0 08, and 0 04 in a sixth patient who did not live long enough to achieve a raised blood histamine Did she die of shock? Their figures are not as high as those obtained for whole blood by Barsoum and Smirk using the same method in cases of congestive cardiac failure, which results were due solely to excess of H Y S in the cells When the great increase of red cells in the blood in burns and the fact that intracellular H Y S has no effect are taken into account, the figures given in this paper become even less significant Further, the authors did not note flushing of the face or other signs of the presence of histamine in the circulation, and it is doubtful whether anyone has done so in cases of burns The distribution of histamine between cells and plasma in such cases must be shown before the conclusion reached can be maintained

HOOKWORM ANÆMIA

ANÆMIA is a symptom and not a disease And in a review of present knowledge of the causes and treatment of hookworm anæmia Colonel Clayton Lane[1] points out the importance of remembering that cure of a symptom does not necessarily remove its cause In order to understand this particular disease he thinks it essential to go back to first principles and he begins his paper with a discussion of the erythron and hæmopoiesis It is therefore perhaps surprising that he accepts without question Sabin's theory of red cell development The normal hæmoglobin level, he agrees, is a controversial matter but believes it essential to recognise that 100 per cent on the Haldane scale should be regarded as a minimum figure for health and that optimum figures should be higher The purpose of treatment in hookworm anæmia should be to raise the hæmoglobin not merely to 80 per cent , which has been accepted as the criterion of cure, but above 100 per cent The extensive studies of Rhoads and others[2] are inconclusive because in the first place they accepted a relatively low level of hæmoglobin as normal, and secondly because they were satisfied with what Colonel Clayton Lane believes to be unreliable methods of testing for the presence of parasites and of removing them when found Their contention, therefore, that it is possible, by treatment with iron alone, to cure hookworm anæmia without disinfestation he regards as non proven He has found no case recorded in which the hæmoglobin level reached 100 per cent Haldane or its equivalent while the patient was still infested Treatment should first remove the worms, and secondly, supply adequate iron He makes a plea for a determined and immediate effort to discover what anthelmintic, new or old, is the best and safest, since under present living conditions unworming is the only way of preventing infection and curing anæmia in hundreds of millions of people Even if the anæmia is to some extent relieved by giving iron without removal of the worms the patient is still a dangerous source of infection to the community

Colonel Clayton Lane's stimulating view is set out in basic English and those who read it will find that the use of a vocabulary of only 850 words—apart from technical terms—lends itself to incisiveness and simplicity

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[1] *Clin Sci* 1936 2 337

[2] *J Physiol* 1935 85 1

[3] *Clin Sci* 1936 2 353.

[4] *Ibid* p 357

[1] *Trop Dis Bull* 1937 34 1

[2] Rhoads, C P Castle W B Payne G C and Lawson H A 1931) *Medicine Baltimore* 13, 317

UTERINE CONTRACTIONS

ALL too little is known about the factors governing the contractions of the uterus—a subject of great practical importance Knaus in 1927 published observations on the influence of the corpus luteum and since then a good deal has been found out about the nature of spontaneous uterine activity and the type of response of the muscle to chemical, hormonic, and physical stimuli This varies as is now well known with the species of animal, the phase of sex cycle pregnancy and the stage of pregnancy Knaus and others believed that spontaneous contractions and the reaction of the muscle to posterior pituitary extract are most noticeable about the time of full development of the follicles in the ovary when the secretion of œstrin is high and least during the dominance of the corpus luteum The latter observation has been confirmed by several workers but is disputed by others; for Schultze Moir Tachezy and now E M. Robertson[1] have been unable to demonstrate an altered activity in the response of the uterine muscle to posterior pituitary extract during the luteal phase of the ovarian cycle Robertson s observations were made with the use of a minute rubber balloon inserted into the (non pregnant) uterus filled with fluid and connected to a manometer Twenty records were made in some twelve women, and several examples of tracings are reproduced in his paper The experiments seem to demonstrate clearly the activity of the muscle and the existence of a response to posterior pituitary extract while the uterus is under the influence of an active corpus luteum Such findings throw doubt on the advisability of using preparations of progestin (the corpus luteum hormone) to discourage uterine contractions in a case of threatened abortion But clinicians are persuaded that its use for this purpose is effective and it is possible that during pregnancy progestin may have a desensitising action not apparent at other times

JOHN HUNTER AS A MILITARY SURGEON

IN 1762, towards the end of the Seven Years War our ancient ally Portugal was invaded by Spain and appealed for help with the result that a British expeditionary force under John Campbell fourth Earl of Loudoun, was sent to assist the Portuguese army The Earl had seen service previously in the 45 and in North America; he was an indefatigable worker who also kept his papers and as commander in-chief he then had charge of the medical service as well as of the fighting Three hundred documents from his collection were acquired in 1934 by the Royal College of Surgeons on the recommendation of the honorary librarian Sir D Arcy Power and they have now been investigated by Prof George Gask who described their contents in a special lecture given at the College on Monday last The papers are of much interest not only because of the light they throw on the conditions and equipment of the army medical service of the time but also because John Hunter served in this expedition as a military surgeon

When John Hunter first came to London at the age of twenty he joined his brother William but after ten years with him he contracted a pulmonary affection that it was feared might develop into tuberculosis unless he had a change Accordingly in 1760 he obtained a commission as an army surgeon from the adjutant general, Robert Adair—the original of the well known song 'Robin Adair'—and was sent to Belle Isle off the coast of Brittany which was taken from the French in 1761 When in the following year Portugal was invaded by Spain four regiments of infantry and detachments of the 16th Light Dragoons were sent on from Belle Isle to Portugal where they were joined by two more regiments from Ireland, bringing the total of this B E F to about seven thousand men. The commander in-chief of the allied forces was the Count of Lippe Bückenberg the famous artillerist and he seems to have succeeded in holding the Spanish invasion not by attack but by laying waste the country in front of the enemy and by defending the line of the Tagus so as to cover Lisbon. The hospitals with which Hunter was concerned were thus situated all along this river The military operations were so trifling that some historians ignore them altogether In the returns of the sick there is no mention of a wound and as a rule no diagnosis From one paper however it seems that the chief complaints were fever ague and flux; these as Prof Gask remarked are the age long complaints of the army One of the most interesting of the papers is a list of the officers of the hospital appointed for the use of this force giving the rates of pay per diem The director William Young received 25s a day Two physicians Dr William Cadogan (whose portrait hangs on the stairs of the Royal College of Physicians) and Dr Michael Morris, got £1 each The surgeons John Hunter Francis Tomkins and William Maddox, had to be content with 10s and likewise the two apothecaries Finally came the surgeon s mates at 5s a day each There were 18 of them and although Prof Gask did not say so one suspects that they did most of the work But there was also a female staff attached to the hospital consisting of a matron who received 2s 6d a day two head nurses and five washerwomen at 1s and sixteen nurses at 6d Prof Gask endorsed the value of the washerwomen from his own war experience There is a difference of opinion about the status of the nurses some holding that they were selected from the camp followers, but Prof Gask gave reasons for believing that they had had some hospital training The orders for the discipline of the hospital show that this was under the control of the combatant side and that the duties were not unlike those of the modern military police

As regards John Hunter there are a number of official returns signed by him one of which is a list of the sick on board the hospital ship *Betty* while bound from Belle Isle to Lisbon He seems to have tried to secure the post of deputy-director of the hospital but without success and when Dr Cadogan was invalided home Hunter actually applied for the post of physician but again without getting it Probably the increased income was his chief object He seems to have been in close touch with Lord Loudoun and to have discharged his duties often in difficult circumstances with the vigour and efficiency that all familiar with his character would expect Transport appears to have been a constant trouble for ambulances had not been invented and country carts had to be used unless the journey could be made by boat When Hunter joined the troops at Belle Isle he described his colleagues in a letter home as a dammed disagreeable lot, but the accusation of Jesse Foot that Hunter was quarrelsome on this expedition is not borne out by these Loudoun papers On the other hand they prove that the chief authority that Foot gives for his statement had a vile temper himself, so that his evidence is worthless Prof Gask's lecture will be published in full in the *British Journal of Surgery*

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[1] *Edinb Med J* January 193 p [illegible]

THE EHLERS-DANLOS SYNDROME

In the December issue of the *British Journal of Dermatology and Syphilis* Dr F Parkes Weber writes of one of the rarest of cutaneous congenital abnormalities, only 8 cases of which have so far been recorded in this country Three features are essential for the diagnosis of the Ehlers Danlos syndrome (1) over-elasticity of the skin, which may be limited to certain areas, such as the knees and elbows, or may be more or less general, (2) over extensibility of joints, especially the metacarpo phalangeal of the thumb, and (3) friability or fragility of the skin and its blood vessels, which must not be confused with epidermolysis bullosa as regards the former, or the dangerous hæmorrhagic tendency of the congenital "bleeder" as regards the latter Dr Parkes Weber regards the third feature as the most important, and it should not be ignored in the future recording of cases of "elastic skin" and "double jointed" freaks—an occasional attraction in sideshows and travelling circuses

GAS-PROOF ROOMS

The air-raid precautions department of the Home Office recommend that "in each house a room or rooms should be prepared to prevent the entry of gas, so that it may be safely occupied during a raid in which gas is used" The Cambridge Scientists' Anti War Group has been making experiments to discover whether rooms prepared according to the official instructions are really gas proof They find [1] that such rooms are in fact so leaky that—

> "if the gas outside is strong enough to injure a man fatally in one hour, then he will receive an equal dose in two and a half to four hours in his 'gas proof' room If the gas is much stronger outside and would kill in five minutes, then the survival time in the room would be only half an hour to an hour inside These calculations are made on the assumption that the concentration of the gas remained constant, as it would do if a persistent gas were sprayed down the street"

After pointing out that in working class homes a gas proof room could seldom be provided, they describe experiments showing that gas masks have only a limited value and express doubts about the possibility of protecting young children Finally they comment on the catastrophic results to be expected from attacks on congested areas using gas, incendiary bombs, and high explosives, and illustrate their thesis with accounts of some (not very impressive) tests with the only form of thermite they could obtain To those familiar with what has already been written on the subject their book contains few surprises, but it will no doubt destroy any undue confidence that may be felt in the efficacy of domestic gas proofing The object of the Government is to prepare people's minds against air-attack so that if this comes the public will do its best to avoid asphyxiation and (believing in the measures suggested) will refrain from losing its head The object of the Cambridge Scientists' Anti War Group, on the other hand, is to declare in advance that these measures are of little value and thus frighten the public into considering means of *preventing* war Their book does much to counter optimism about safety against attack, and we agree with them that the facts, however unpleasant, should be faced But the ordinary man is going to say, with some reason, that if it comes to air raids he will certainly accept a Government gas mask, and remain in a gas proofed room—however leaky both may be—rather than be altogether unprotected

INCIDENCE OF TUMOURS OF THE CENTRAL NERVOUS SYSTEM

It is remarkably difficult to form an accurate estimate of the incidence of any one type, or group, of tumours when the study of such a type or group has become the subject of intense surgical specialisation An obvious effect of such specialisation is the attraction of sufferers to centres where the prospects of treatment are best In any general hospital the establishment of a clinic for a particular type of case will naturally result in a great increase of material of such a kind at that hospital, and conversely—a point that is frequently forgotten—in its diminution in neighbouring hospitals In the recent analysis by J H Peers [1] of the tumours of the central nervous system examined at necropsy at the Boston City Hospital during the past 38 years it is perhaps surprising to find that 188 tumours only were found in a total of 5150 necropsies in which the head had been examined, as compared with 1270 tumours, both benign and malignant, in other sites The period covered by this series is from January, 1896, to December, 1934 It would be instructive to know whether the advent of Dr Harvey Cushing to the neighbouring Peter Bent Brigham Hospital had any appreciable effect upon the incidence of intracranial tumours at the Boston City Hospital. The impossibility, at the present time, of correlating the incidence of tumours of the central nervous system with that of tumours of other organs is due to the absence of any general survey comprising sufficiently large figures and free from disturbing factors of the kind indicated It has been stated by Bailey and Cushing in their monograph (1926) that, next to the uterus, the brain is the most common site of tumours, their view however can hardly be regarded as unbiased

Although in the Boston City Hospital series the number of cases in many groups is too small to be significant, it is of interest that in the glioma group the proportions of the different types conform to those of Cushing's much larger surgical series It is not surprising that the metastatic tumours are proportionately more numerous than in Cushing's series, because recognised cases of this kind are less apt to be referred to a neurosurgical clinic

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Sir Henry Brackenbury has accepted an invitation to stand for the Combined English Universities seat in Parliament, rendered vacant by the death of Sir Reginald Craddock

On Feb 25th, March 2nd and 4th, at 5 P M, Dr D E Denny-Brown will deliver the Goulstonian lectures to the Royal College of Physicians of London He will speak on the nervous control of micturition and its disorders The lectures will be given at the College, and members of the medical profession will be admitted on presentation of their card

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[1] Protection of the Public from Aerial Attack Being a critical examination of the recommendations put forward by the air-raid precautions department of the Home Office. By the Cambridge Scientists Anti War Group (Editorial committee J D Bernal M.A Prof H A Harris M B A F W Hughes Ph D Joseph Needham Sc.D N W Pirie Ph D J S Turner Ph D D H Valentine M A E B Verney F R C.P F R.S C H Waddington M.A Arthur Walton Ph D and W A Wooster Ph D) London Victor Gollancz Ltd 1937 Pp 127 2s 6d

[1] *Amer J Path* 1936, 12, 911

PRINCIPLES OF MEDICAL STATISTICS

VIII—FURTHER PROBLEMS OF SAMPLING χ^2

In the previous section attention was devoted to the appropriate test of the significance between two proportions. Occasions frequently arise however when we need to compare the characteristics of more than two groups For instance instead of comparing the proportion of vaccinated persons who are attacked with small pox with the proportion of unvaccinated persons who are attacked we wish to see whether the proportions attacked vary with the duration of time that has elapsed since vaccination We shall then have a series of differences between groups to interpret For the comparison of such distributions the χ^2 test has been developed (originally by Karl Pearson)

Interpretation of a Series of Proportions

The statistical procedure may best be discussed by means of a concrete example Table VII shows the distribution of intelligence quotients in a group of nearly a thousand children and the number in each intelligence group that were clinically assessed as having normal or subnormal nutrition

TABLE VII—*Intelligence and Nutritional State* *

—	Intelligence quotients—				
	Under 80 %	80–89 %	90–99 %	*100 %* and over	Total
(i) Number of children with satisfactory nutrition	245	228	177	219	869
(ii) *Number of children with unsatisfactory nutrition*	31	27	13	10	81
(iii) Total number of children observed	276	255	190	229	950
(iv) Percentage in each intelligence group that had unsatisfactory nutrition	11·2	10·6	6·8	4·4	8·5

* From the Relation between Health and Intelligence in School Children by N J England (1936) *J Hyg Camb* 36 74

The percentages in the last line of the table show that amongst the more intelligent children there were proportionately fewer instances of subnormal nutrition and the regular progression of the percentages from 11·2 to 4·4 as the intelligence quotient rises suggests that this relationship is unlikely to have arisen merely by chance It is clear however that if another sample of 950 children were taken at random from the same universe of children we should not necessarily find in the different intelligence groups exactly 11·2, 10·6 6·8 and 4·4 per cent with unsatisfactory nutrition. Each of these percentages is certain to vary from one sample to another and the smaller the sample the more, as has been previously shown they are likely to vary The question at issue then becomes this is it likely that the magnitude of the differences between these percentages and also their orderly progression could arise merely by chance in taking samples of the size given in line three? Is it likely in other words that if we had observed the whole universe of children from which the sample was taken the percentage with unsatisfactory nutrition would be just the same in each intelligence group? To answer that question the assumption is made that the percentage with *unsatisfactory nutrition ought to be identical* in each of these groups—i e that intelligence and nutrition are unrelated We then seek to determine whether that assumption is a reasonable one by measuring whether the differences *actually* observed *from* the uniform figure might frequently or only infrequently arise by chance in taking samples of the recorded size If we find that the departure from uniformity is of the order that might frequently arise by chance then we must conclude that the varying percentage of children with unsatisfactory nutrition in the different intelligence groups *suggests* that intelligence and nutrition are associated but that these differences are not more than might have arisen by chance and might vanish if we took another sample of children We must therefore be cautious in drawing deductions from them If on the other hand we find that the differences from our assumed uniformity are such as would only arise by chance very infrequently then we may reject our original hypothesis that each of the groups ought to show the same percentage For if that hypothesis were true an unlikely event has occurred, and it is reasonable to reject the unlikely event and say that we think the differences observed are real in the sense that they would not be likely to disappear (though they might be modified or increased) if we took another sample of children of equal size

THE TECHNIQUE INVOLVED

The statistical technique therefore involves—

(1) Calculating *how many children in each intelligence* group would fall in the satisfactory nutrition category and how many in the unsatisfactory nutrition category on the assumption that intelligence and nutrition are unrelated so that the proportions in the nutrition categories ought to be the same in each group

(2) Calculating the differences between these numbers expected on the hypothesis of no relationship and the numbers actually observed.

(3) Calculating whether these differences are of a magnitude likely or unlikely to be due to chance

The first step is to determine what is the uniform percentage with unsatisfactory *nutrition that* we should expect to observe in each intelligence group if intelligence and nutrition are unassociated. Clearly that figure must be the percentage of malnourished children in the *universe from* which our sample was taken; that is the figure we should, apart from sampling errors expect to obtain in each intelligence group if this characteristic is not associated with nutrition. *We do not know that* figure but as an estimate of it we may take the proportion of malnourished children in our sample as a whole—namely 8·5 per cent Our assumption then is that the *proportion of malnourished* children ought to be 8·5 per cent. in each intelligence group If that assumption is true should we be likely to observe in a sample of the size given, percentages of 11·2 10·6 6·8 and 4·4 *merely* by chance? We must first calculate the number of children expected in each intelligence group on this hypothesis that 8·5 per cent. of them ought to have belonged to the malnourished *category* and *91·5 per cent* to *the* satisfactorily nourished category These figures are given in italics in Table VIII being calculated by simple proportion—e g there were 276 children whose *intelligence quotient* was *below 80 per cent*; we expect 8·5 per cent of these 276 or 23 to be malnourished and 91·5 per cent or the remaining 253 to be satisfactorily nourished

TABLE VIII—*Calculation of* χ^2

—	Intelligence quotients—				
	Under 80 %	80–89 %	90–99 %	100 % and over	Total
(i) Observed number with satisfactory nutrition	245	228	177	219	869
(ii) Expected number on hypothesis that nutrition and intelligence are unrelated	*253*	*233*	*174*	*209*	*869*
(iii) Difference, observed minus expected	−8	−5	+3	+10	
(iv) (Difference)^2	64	25	9	100	
(v) (Difference)^2 ÷ Expected number	0·25	0·11	0·05	0·48	
(i) Observed number with unsatisfactory nutrition	31	27	13	10	81
(ii) Expected number on hypothesis that nutrition and intelligence are unrelated	*23*	*22*	*16*	*20*	*81*
(iii) Difference observed minus expected	+8	+5	−3	−10	
(iv) (Difference)^2	64	25	9	100	
(v) (Difference)^2 ÷ Expected number	2·78	1·14	0·56	5·00	
Total—					
Observed	276	255	190	229	950
Expected	*276*	*255*	*190*	*229*	*950*

The next step is to calculate the differences between the observed and expected entries. These, given in the third line of each half of the table, show that there are in fact more children of low intelligence with subnormal nutrition than would be expected on our hypothesis of equality and fewer with subnormal nutrition in the higher intelligence groups than would be expected on that hypothesis—e.g., of children in the under 80 per cent. intelligence group 31 had unsatisfactory nutrition whereas we expected only 23; of children in the over 100 per cent. intelligence group there were only 10 with unsatisfactory nutrition whereas we expected 20. These differences if added together according to their sign must come to zero. To get rid of this difficulty of sign, and for mathematical reasons underlying the test, each difference is squared (as shown in line iv). Finally the following point must be observed. If the number expected in a group is, say, 75, and the number actually observed is 100, the difference of 25 is clearly a relatively large and important one, since it amounts to one third of the expected number. On the other hand, if the number expected in the group is 750 and the number actually observed is 775, the difference of 25 is a relatively small and unimportant one, since it amounts to only 3·3 per cent. of the expected number. To assess the importance of the difference, its square is therefore divided by the number expected in that category (in the first case above this gives a value of $(25)^2/75$ or 8·3, in the second case $(25)^2/750$ or only 0·83). The sum of these values is known as χ^2. In this table it equals $0·25 + 0·11 + 0·05 + 0·48 + 2·78 + 1·14 + 0·56 + 5·00 = 10·37$.

In other words χ^2 is equal to the sum of all the values of

$$\frac{(\text{Observed number} - \text{Expected number})^2}{\text{Expected number}}$$

THE INTERPRETATION OF THE χ^2 VALUE

χ^2, it will be observed, will be zero if the observations and expectations are identical; in all other cases it must be a positive value, and the larger the relative differences between the observed and expected values the larger must the value of χ^2 be. Also the more sub groups there are in the table the larger χ^2 may become, since each sub group contributes a quota to the sum. Therefore in interpreting the value of χ^2 account must be taken both of the value itself and of the number of sub groups contributing to it. In fact, although its mathematical foundation is complex, the interpretation of χ^2 is simple by means of published tables—e.g., Table III in Fisher's "Statistical Methods for Research Workers" (Sixth edition. Edinburgh and London: Oliver and Boyd. 1936. 15s.), of which an illustrative extract is given at the end of this article. These tables show whether the various differences found between the observed and expected values, as summed up in χ^2, are sufficiently large to be opposed to our hypothesis that there ought to be a uniform proportion of malnourished children in each intelligence group. For instance in the present example $\chi^2 = 10·37$ and the number of independent sub groups is 3 (this number will be referred to in a moment); for these values Fisher's table gives a probability of somewhat less than 0·02—see table below. (The exact probability can be obtained from larger tables but is not always important, the main question being whether this value of χ^2 is one which is likely or unlikely to have arisen by chance.) The meaning of this probability is as follows. If our hypothesis that we ought to have observed the *same* percentage of malnourished children in each of the intelligence groups is true—i.e., we are sampling a universe in which malnutrition and intelligence are not associated—then in the different intelligence groups of the size shown we might have reached merely by chance the differing malnourished proportions actually observed (or even larger differences from the uniformity expected) about once in fifty times (0·02 equals 2 in 100). In other words if we had 50 separate samples of 950 children with this distribution of intelligence and ought to observe within each the same percentage of malnourished children in the intelligence groups, then in approximately only one of these 50 samples should we expect the actual proportions of malnourished children in the intelligence groups to differ between one another, by chance, by as much as (or more than) the proportions we have observed here. Once in fifty we may take to be an unlikely event and may therefore conclude that our original testing hypothesis of equality is wrong, and that it is more likely that the intelligence groups really differ in the incidence of malnourishment. If on the other hand our χ^2 value had turned out to be 4·64, then the probability figure would have been 0·2. In other words, once in five trials we might reach differences of the observed magnitude between observation and expectation merely by chance. Once in five trials is a relatively frequent event, and we should have to conclude that the differences between the proportions of malnourished children in the intelligence groups might easily have arisen by chance, and we can draw from them no more than very tentative conclusions.

As with all tests of "significance" it must be observed that the final conclusion turns upon probabilities. There is no point at which we can say the differences could not have arisen by chance or that they must have arisen by chance. In the former case we say chance is an unlikely cause, in the latter that it could easily be the cause. It may not have been the cause in the latter—real differences may exist—but our data are insufficient for us to rule out chance as a valid hypothesis

HOW TO USE FISHER S χ^2 TABLE

Finally we must consider the number of sub groups or cells, in the table contributing to χ^2

In Table VII (or VIII which shows the calculations on the data of Table VII) there are 8 such values contributing to the sum In finding P the probability from Fisher s table we took the number n, to be only 3 The rule to be followed in tables of the type taken above as an example is that n is the number of cells which can be filled up independently of the totals in the margins at the side and bottom of the table In Table VII the expected numbers of malnourished children in three of the intelligence groups must be found by simple proportion by applying 8 5 per cent to the total number of children in each of those three groups Having found those three values all the other expected values can, however be found by simple subtraction since the total expected values vertically and horizontally must be the same as the observed values—e.g having found the expected values of 23 22 and 16=61 in three intelligence groups, the expected number in the fourth group must be 20 since the total must be 81 (8 5 per cent of 229 is nearly 20) Similarly if 23 malnourished children are expected in the intelligence group of " under 80 per cent then the well nourished in that intelligence group must be 253 for the total children of that type is 276 Hence only 3 values in this table need to be found independently by applying proportions and the remainder can be found by subtraction.

In any practical problem the number of expected values which need to be found independently by simple proportion can easily be ascertained on inspection of the table alternatively they can be found by means of the rule $n=(c-1)\ (r-1)$ where c is the number of columns excluding the total columns and r the number of rows in the table—e g in Table VII $n=(4-1)\ (2-1)=3$ It is with this n that Fisher s table must be consulted

It may be pointed out that in the above example the expected numbers were taken to the nearest whole number for the sake of simplification, but it would have been more accurate to retain one decimal and in practice this should be done A warning may be added that if the expected number in any cell is less than 5 the χ^2 value is liable to be exaggerated and the probability derived from it may be inaccurate In such cases adjacent columns should if possible be amalgamated to give larger expected numbers.

The following table is a short extract given for illustrative purposes from Fisher s table In the latter the χ^2 values are tabulated for each value of n from 1 to 30 and for 13 probability values.

Table of χ^2

n	$P=0{\cdot}90$	0·70	0·50	0·20	0·05	0·02	0·01
1	0·0158	0·148	0·455	1·642	3·841	5·412	6·635
3	0·584	1·424	·366	4·642	7·815	9·837	11·341
10	4·865	7·267	9·342	13·442	18·307	21·161	23·209
15	8·547	11·721	14·339	19·311	24·996	28·259	30·578

n is the number of cells that needed to be filled independently (as defined above) in the table of observations under study In the centre of Fisher s table are set out the values of χ^2 At the top is the probability arising from the observed value of χ^2 for a given value of n For instance in the example taken above n was 3 and χ^2 was 10 37 Glancing along the χ^2 values against $n=3$ we see that a χ^2 of 9 837 gives a P or probability of 0·02 and one of 11 341 gives a P of 0·01 Our value of 10 37 must therefore give a P of somewhat less than 0·02 If on the other hand χ^2 had been 4 642 we see that the P against that value is only 0 2 If n had been 10 and the value of χ^2 found were 18 307 then P would be 0·05 As a conventional level a P of 0·05 is usually taken as significant —i.e the proportions observed in the different groups under examination would only show by chance a departure from the assumed uniformity as great as (or greater than) that actually observed once in twenty times But, as pointed out in the last section, the worker is entitled to take any level of significance he wishes so long as he makes his standard clear

Summary

In practical statistics occasions constantly arise on which we wish to test whether persons who are characterised in some particular way are also differentiated in some second way—e.g whether persons of different hair colour have also a different incidence of say tuberculosis Suppose we take a random sample of the population divide them into groups according to their hair colour and then compute for each of these groups the percentage of persons with active tuberculosis These percentages will probably not be identical even if hair colour and incidence of tuberculosis are *not* associated Owing to chance they will vary between themselves We need a measure to show whether such observed differences in incidence are in fact likely or unlikely to be the result of chance. To this type of problem the χ^2 test is applicable. A. B H

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED FEB 6TH 1937

Notifications—The following cases of infectious disease were notified during the week: Small pox 0; scarlet fever 1066 diphtheria 1253; enteric fever 61 pneumonia (primary or influenzal) 3140 puerperal fever 50; puerperal pyrexia 148; cerebro spinal fever 87; acute poliomyelitis 3; encephalitis lethargica 6 dysentery 30; ophthalmia neonatorum 78 No case of cholera plague or typhus fever was notified during the week.

Notifications of acute pneumonia in England and Wales were 93 per cent. above expectation in London itself 17 per cent below

The number of cases in the Infectious Hospitals of the London County Council on Feb 12th was 3437 which included, Scarlet fever 809 diphtheria 1006 measles 22; whooping cough 607 puerperal fever, 0 mothers (plus 1 babies) encephalitis lethargica 281 poliomyelitis 3 At St. Margaret s Hospital there were 17 babies (plus 7 mothers) with ophthalmia neonatorum

Deaths—In 122 great towns, including London there was no death from small pox 4 (1) from enteric fever 3 (0) from measles 5 (1) from scarlet fever 40 (1) from whooping-cough, 62 (6) from diphtheria 37 (13) from diarrhoea and enteritis under two years and 976 (101) from influenza The figures in parentheses are those for London itself

Of the 783 deaths from influenza in the great towns of England and Wales outside Greater London the largest total were reported from Manchester 51 Birmingham 50, Sheffield 37 Liverpool 35 Leeds 30 Plymouth 15 Derby 12, Bristol 11 Ipswich 10 Of these only Birmingham Sheffield and Leeds showed a drop from the previous week. The corresponding figures for Scottish and Irish towns were Edinburgh 37 Glasgow 39, Dublin 43 Belfast 18

Darlington reported 1 death from enteric fever Liverpool the other 2 Bolton had 4 deaths from whooping-cough, Middlesbrough 3 Willesden, Wood Green and Manchester each Fatal cases of diphtheria were reported from 24 great towns Birmingham 7 Liverpool 5 Hull and Manchester each 4 Swansea 3

The number of stillbirths notified during the week was 202 (corresponding to a rate of 42 per thousand total births) including 50 in London

SPECIAL ARTICLES

THE NEUTRALISING VALUE OF POLIOMYELITIS CONVALESCENT SERUM

FROM THE 1934 EPIDEMIC IN DENMARK

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During 1934 there was an extensive epidemic of poliomyelitis in Denmark. Aside from its magnitude this epidemic was of especial interest because during the latter half of the year nearly 4500 carefully diagnosed cases were taken into hospital, of which 4000 were in the early systemic phase of the disease. Unlike most epidemics elsewhere it occurred in a population where, owing to the long standing and systematised methods of public health administration, the medical profession and the general population are amenable to centralised control and uniform policy. The value of this appeared in the ease with which convalescent serum was collected. A preliminary report on the epidemiology and clinical features of the outbreak, and the use of convalescent serum, has appeared elsewhere and may be consulted for details (Jensen 1935).

The 1934 epidemic followed a smaller one in the previous year, when some evidence of the value of convalescent serum was obtained although the supply was inadequate. It was anticipated that in the summer and autumn of 1935 there would be a third epidemic for which it was desirable to have on hand an adequate supply of suitable convalescent serum.

In almost all previous epidemics elsewhere serum has been taken from old paralytic cases of poliomyelitis with crippling evidence of the disease. These were doubtless selected because of the ease with which they could be traced and because the diagnosis was certain. It may, however, be questioned whether such donors are likely to yield sera with the highest possible content of protective antibody. It is well known that the capacity for antibody production against specific antigenic stimuli varies immensely, and in poliomyelitis the paralytic cases may represent individuals with a low response. In virus infections the time interval between infection and the peak of antibody content in the serum appears to follow the same course as in most other infections. Brodie (1932a and b) has shown that in animals the response to an intradermal dose of poliomyelitis virus reaches a maximum within 20–30 days, and that after a second dose antibody forms rapidly with a maximum in 10–18 days. If the same is true of man it follows that serum must be collected much earlier than is usual if the greatest concentration of antiviral principles is to be obtained. In Denmark the selection of donors was made with this in mind.

The principal objectives in reinvestigating the protective power of convalescent serum were first, to use the opportunity here presented of testing pools of serum from selected donors in quantities sufficiently large to be of practical use in epidemics; and, secondly, to discover whether, by selection of donors at certain phases during convalescence, serum of higher potency might be obtained.

All the serum was taken from fresh cases representing three different clinical groups of patients—namely, (*a*) frankly paralytic cases, (*b*) non paralytic cases, and (*c*) abortive cases. The "abortive" cases were those in which very slight and transitory symptoms appeared in persons who were in close relationship to unquestionable paralytic and non paralytic cases in families or institutions. It has seemed reasonable to assume that in such cases the infection is abortive by reason of their greater capacity to resist an infective dose of virus and also to produce antiviral substance quickly. The interval between the onset of disease and bleeding was therefore shortest in these donors.

Serum was collected, stored in ampoules without preservative, and tested for sterility in Denmark. To avoid delay and possible deterioration sera were transported to England by air mail and kept in the cold room during the test period. The selection of cases, the preparation of sera, and the entire epidemiological part of this investigation were carried out by C. J. and E. J. H., while the virus neutralisation tests in monkeys were performed by G. H. E. in England.

PREPARATION OF "STANDARD" VIRUS FOR USE IN THE TESTS

The cervical and lumbar enlargements from twelve cords of monkeys which had recently been killed at the height of complete paralysis were stripped free of the meningeal covering and minced. This rather coarse mince was stored in 50 per cent. saline glycerin at about −10° C. The preparation of minced material from several cords avoided the possibility of using sections of the same or different cords possessing varying concentrations of the virus. It also provided a sufficient amount of virus of about the same virulence to extend throughout the entire investigation. Since it is well known that virus infected cords retain their virulence for many months when kept in glycerin at a temperature below freezing point, this method served to provide a virus of uniform infectivity. The importance of using a uniformly infective dose of virus for comparative tests was clearly shown in the observation of Schultz and Gebhardt (1935b) that the incidence of serum treated animals which escaped infection bore some relationship to the dose of virus with which the animals were inoculated. When 6.6 M.I.D. of virus were used a certain number of animals were protected by serum. With larger doses of virus the same serum prolonged the incubation period but none of the animals escaped infection.

When samples were required for neutralisation tests the mince was thoroughly stirred and approximately the required amount removed and washed in three changes of normal saline. The exact amount for the test was then weighed, ground with sand, diluted, and mixed thoroughly with sufficient normal saline to make a 10 per cent. suspension. The suspension was spun at 3000 to 4000 r.p.m. for fifteen minutes and the uppermost portion of the supernatant removed. When neutralisation or infectivity tests were to be made a fresh 10 per cent. suspension was made from the "standard" minced virus.

Titration of "Standard" Virus.—Decimal dilutions of the 10 per cent. virus supernatant were made in normal saline from 10^{-1} to 10^{-6}. These were incubated at 37° C. for 2 hours and allowed to stand in the cold room overnight. 0.5 c.cm. of each dilution was inoculated intracerebrally into young rhesus monkeys under ether anæsthesia. Monkeys receiving dilutions 10^{-1}, 10^{-2}, 10^{-3} were all completely paralysed on the sixth day following

TABLE I—*Convalescent Serum Pools and Protective Titre*

—	Serum pool	No of cases in pool	Special features	Virus.	Dilution of serum giving complete protection	Dilution of serum followed by complete paralysis	Value in protective "units" per c cm serum
GROUP I—FIRST BLEEDING				M.L.D			
(1) *Paralytic cases* Average 39 days after onset of meningitic state	A 253	67		1000	No protection undiluted		< 1,000
	A 239	22			1 in 20	1 in 40	40 000
(2) *Non paralytic cases.* Average 20 days after onset of meningitic state	B 200	184			1 in 5	1 in 10	10 000
	BB 444	33	Blood group B	"	1 in 75	1 in 100	150 000
	B 505	535	1st test.	"	1 in 40	1 in 60	80 000
			2nd		1 in 20	1 in 40	40 000
(3) *Abortive cases* Average 13 days after onset of meningitic state	O 108	8			1 in 50	1 in 75	100 000
	O 354	20			1 in 5	1 in 10	10 000
	O 261	1	Single serum from O 354		1 in 5	1 in 10	10 000
GROUP II—SECOND BLEEDING							
(1) *Paralytic cases* Approximately 4 months after onset of meningitic state.	A 604	48	*Unconcentrated*		1 in 10	1 in 20	20 000
	A 604 concentrated		Pseudoglobulin concentrated approx. 8 times		1 in 50	1 in 75	100 000
			Euglobulin concentrated approx. 5 times		No protection undiluted		< 1 000
(2) *Non paralytic cases* Approximately 4 months after onset of meningitic state	BB 500	48	Blood group B		1 in 20	1 in 40	40 000
	B 501 B 502 B 506	31	Blood group A		1 in 20	1 in 40	40 000
			Seitz filtered B 501		1 in 20	1 in 40	40 000
			B 501 dried and reconstituted		1 in 75		> 150 000
GROUP III—CONTROL SERA.							
(1) Normal adult sera pooled	Lister	23			1 in 50	1 in 75	100 000
(2) Claus Jensen		1	Single serum from normal pool		1 in 10	1 in 25	20 000
(3) Prague II			Old convalescent.		1 in 25	1 in 50	50 000
(4) 13					1 in 25	1 in 50	50 000
(5) Hyperimmune horse serum			Lister Institute		1 in 75	1 in 100	150 000

< = less than > = more than.

inoculation and were killed The remainder of the series showed no sign of paralysis. Sections from the nervous tissue of paralysed animals showed typical lesions

Test Dose of Virus—0·5 c cm. of a 10^{-3} dilution of the virus was assumed for practical purposes to contain one minimal paralysing dose (M.P D) In order to allow for individual variation in susceptibility of monkeys to the virus 0·5 c cm of a 1 per cent virus supernatant (1000 M.P.D) was selected as the test dose for all neutralisation tests Throughout the investigation this dose always caused complete paralysis within ten days in the control animals

Serum neutralisation Tests

In the first instance all sera were tested undiluted diluted 1 in 10 and 1 in 20 in normal saline. Equal parts of 1 per cent virus and the serum were mixed incubated for 2 hours at 37 C and stood in the cold room over night. A control of equal parts of virus and normal saline was included. Next morning 1 c cm of each virus-serum mixture was inoculated intracerebrally in young healthy *rhesus* monkeys A control monkey received at the same time 1 c cm of the virus-saline mixture When all test animals remained unaffected for three weeks after inoculation fresh monkeys were inoculated with higher dilutions of each serum until an end point of protection was reached and paralysis resulted In all but one instance an initial paralysis progressed rapidly to the complete stage

Results—The dilutions of serum which afforded protection against 1000 M.P.D of the virus are set out in Table I It has been assumed for practical purposes in expressing values that twice the amount of serum actually used in the neutralisation tests would give twice as much protection There is however no experimental proof that this is in fact, true The main object in adopting this scheme of expression has been to denote the values of the different sera in terms of a unit volume (1 c cm) since this might prove useful in future in the event of a standard convalescent human serum from poliomyelitis cases being set up and issued.

Discussion

From this investigation it is difficult to draw clear cut conclusions in favour of the thesis upon which the work was largely based—namely that sera taken early in convalescence from poliomyelitis have a *significantly higher protective titre* than those taken later A source of error which might well make an appreciable difference in the protective value of the sera appears when the number of individual sera in each pool are compared This would *not be serious* if it could be assumed on experimental evidence that each serum in any given pool possessed approximately equal protective value But to make this assumption would not be justifiable in view of the results of other investigators Shaughnessy Harmon and Gordon (1930a and b) found considerable variation in titre of individual convalescent sera, 3 of the 14 sera tests having failed to neutralise in any dilution Schultz and Gebhardt (1931) and Jungeblut and Smith (1932) also obtained some negative results In our own control group evidence of wide variation was suggested when one serum (Group III (2)) from a *pool* of normal individuals gave protection in a dilution of 1 in 10 whereas the pool itself protected in a dilution of 1 in 50 Under such circumstances the dilution factor must influence the titre of a pooled serum in direct ratio of the *number of high titres to* low in the mixture

The single serum just mentioned is of interest in one more respect It was obtained from a man (C J) who for more than two months every day had been in close contact with numerous fresh cases of poliomyelitis in all phases of the disease Yet it was relatively poor in viricidal antibodies (20,000 protective " units " per c cm)

It is well known that individual variation in susceptibility to the virus may be found in the same race of monkeys Even when large enough doses of virus are used to ensure that all control animals become completely paralysed variations in protection appear in different monkeys with the same dilution of a serum Two instances were found in our series in the case of B 505 when a dilution of 1 in 40 gave complete protection to one monkey but not to a second one against the same dose of virus, the test being made on the same day, and again in the neutralisation tests with hyperimmune horse serum Here on one occasion protection was obtained in dilutions 1 in 25 and 1 in 75 of the serum, but with 1 in 50 complete paralysis occurred on the eighth day When the serum was retitrated complete protection was obtained with a 1 in 50 dilution In both cases, however, a dilution of 1 in 100 failed to neutralise and it appeared reasonable to accept the end point of protection as 1 in 75

Since, with these exceptions, only one animal was used for each dilution throughout the series it is not possible to say how far such variation may have influenced our results To this may possibly be attributed the fact that pool B 502 gave so much less protection than the same pool (B 506) when it had been dried and reconstituted. It is probably very unusual, however, for animals to vary so widely as this would suggest and some other explanation must be sought

BLOOD GROUPS

The high protective value in Group I of pool BB 444, consisting of donors belonging to blood group B, recalls the work of Jungeblut and Smith (1932), who found that cases of poliomyelitis were fewer in members of this group, the sera of a greater proportion of normal persons neutralised in this than in other groups, and the pooled sera of this group neutralised in higher dilution than that of other groups When convalescent sera were tested for neutralising power a higher percentage was obtained in those from Group B In this connexion the observations of Madsen, Engle, C Jensen, and Freuchen (1936) are of interest With the clinical material in the epidemic in Denmark with which, for the greater part the present investigation deals, they were unable to relate the blood group of the patients to susceptibility or resistance to the attack In our series comparison of blood groups A and B can be made only in Group II (B 501 and BB 500) where no difference in neutralising power was found

TABLE II

Protective Power of Sera in Relation to Blood Group

Serum pool	—	Blood group	Virus	Dil of serum giving complete protection	Dil of serum followed by complete paralysis	Value in protective units " per c cm of serum
BB 444	First bleeding	B	M P D 1000	1 in 75	1 in 100	150 000
BB 500	Second bleeding	B		1 in 20	1 in 40	40,000
B 501	Second bleeding	A	,,	1 in 20	1 in 40	40 000

The full data as to number of individuals in the pools and time of bleeding appear in Table I

It may be mentioned here that the only striking example of a higher titre in serum taken early in convalescence over that taken later is found in blood group B (BB 444 and BB 500)

In order to make this point clearer the data regarding protection by blood group have been recast in Table II

THE BEST SOURCE OF CONVALESCENT SERUM

From our investigation, selected convalescent sera appear to have little advantage over serum from normal adults when the titre of the control pool is compared with the values obtained in the convalescent groups I and II A strict parallel between normal serum and convalescent pools cannot, however, be made since only one sample of pooled normal serum was tested as compared with eleven from convalescents The relatively high neutralising value of two pooled sera from convalescents of long standing compared favourably with many of the convalescent pools This has been the experience of most other investigators who have worked along similar lines

In a preliminary report it has been stated (Eagles, cited by C Jensen, 1935) that the pooled sera from abortive and non paralytic cases appeared to have higher neutralising value than from paralytic cases At that time the investigation was incomplete, the results now available call for qualification of the earlier statement in that when a larger number of pools was examined both high and low neutralising titres occurred in the pools from all three types Investigation on a larger scale might make this point clearer, especially in view of the fact that, on the whole, the neutralising values are higher than in the paralytic cases

NEED FOR STANDARDS

In our experiments an attempt has been made to use a standardised technique in order to make the results comparable We consider this important because the results of neutralisation tests in published data are often stated only vaguely, thus "nine out of the nineteen sera neutralised the virus when the serum had been diluted 1 in 60," or "such sera regularly neutralised the virus emulsion when diluted 1 in 20, but did not neutralise in dilution 1 in 30" As the method of preparing the virus emulsion and the test dose used is not always given, it is obvious that such results are not comparable If the possible effect of convalescent serum therapy is to be correctly evaluated, if the maximum of information is to be obtained from clinical trials, and if the results in different countries are to be rendered comparable, it is essential that all anti poliomyelitis sera used experimentally and clinically should be tested *in relation to a common standard and their potency expressed in terms of this standard* This has been emphasised by Th Madsen and C Jensen (1935), who have proposed an international standard for anti poliomyelitis convalescent serum

Even with the technique employed by us the results, for this reason, cannot be regarded as quite comparable If future work of this kind were to be undertaken it would therefore seem advisable to use, if possible, both the test virus and the proposed international standard serum preserved in the dried state Furthermore, the testing of an unknown serum should always include a control series with the test dose of virus against varying amounts of the standard serum These tests should be carried out simultaneously and under strictly comparable conditions, and, despite the expenditure incurred, a sufficiently large number of animals for each dilution of the unknown serum and the standard serum to guard against variation in the susceptibility of an individual monkey to the serum virus mixture.

IMMUNE HORSE SERUM

In the control group of sera a sample of hyperimmune horse serum prepared in the serum department of the Lister Institute has been included for comparison with our selected convalescent pools. It will be seen that pool BB 444 has equal neutralising value with the horse serum and C 108 has a value only slightly less There is hesitation in using immune horse serum in the treatment of poliomyelitis These results show that it is possible to secure large quantities of convalescent serum with a neutralising value which compares favourably with hyperimmune horse serum.

VALUE OF SERUM IN TREATMENT AND PROPHYLAXIS

The question naturally arises whether the possible value of serum therapy in combating poliomyelitis justifies further investigation In the Danish as well as in other recorded epidemics the value of serum therapy has been questionable owing to the absence of an adequate control group The large proportion of untreated cases that make an uneventful recovery confuses the issue still further It is impossible to judge the value of serum in contacts since many with or without serum never contract the disease. It is as a prophylactic and in the pre paralytic stage that serum may be of value if massive repeated doses of a tested highly neutralising serum are employed Schultz and Gebhardt (1935a and b) have shown that in the experimental disease immune serum was of limited value as a prophylactic The infecting dose of virus was important Large amounts of high titre immune serum might protect monkeys against small doses of virus The effect of the serum was, apparently to diminish the quantity of virus free to initiate infection and the larger the initial dose of virus the less effective became the serum It is probable that some such ratio between virus and antibody determines the outcome in serum treated cases while in the experimental disease under such conditions even small differences in susceptibility of the animals would become important The great affinity of the virus for nervous tissue the ease with which it passes along the olfactory nerve to the central nervous system and its possible absence at all times from the blood stream may assure it a high degree of protection from serum antibodies once the disease is established The present trend of preventive measures—at any rate in America—is towards the application of chemical substances to the nasal mucous membrane, to protect the endings of the olfactory nerve from invasion (Armstrong and Harrison 1935 Sabin Olitsky and Cox 1936 Schultz and Gebhardt 1936) But should such measures prove effective for routine prophylactic treatment, there will still remain a demand for serum since no other form of specific treatment is at hand in combating the established disease.

That convalescent or other sera are of real value in human poliomyelitis is not proven Almost uniformly however the clinical evidence points to an improvement in symptoms and general condition when convalescent serum is employed and to disregard this fact would be unwarranted Moreover the behaviour of serum in the experimental disease cannot be used as a true index of its effects on the natural course of human poliomyelitis Harmon and Harkins (1936) express the opinion based upon an analysis by Harmon (1934) of 4400 patients treated with serum that convalescent and other specific serum therapy should be continued. The serum used should be of the highest possible neutralising value as judged by animal tests In a survey of the literature dealing with neutralising antibody in the blood of human convalescents Harmon (1936) draws attention to the high percentage (about 40) of cases in which neutralising antibody is absent In normal persons the antibody content rises with advancing age and the same survey shows that at fifteen years of age 73 per cent. have neutralising antibody Since it is impracticable to test each serum separately and to pool only those of high value full neutralisation tests should be carried out on serum pools that are intended for use in practice if those of low titre are to be avoided. Pools of relatively low neutralising titre need not be discarded. Our results show that these may be fractionated, and by concentration of the pseudoglobulin fraction a serum of relatively high value be obtained (A 604 A 604 conc.)

SUMMARY

The protective value, as judged by neutralisation tests in monkeys of human convalescent serum collected from the Danish epidemic of 1934 has been investigated. Separate pools were obtained from abortive non paralytic, and paralytic cases 13–20 days after the onset of the meningitic state and compared with similar pools collected about four months later Some evidence has been obtained that pooled serum taken very early from non paralytic and abortive cases may have higher neutralising value than from paralytic cases but this is not sufficiently definite to be convincing Serum taken early in convalescence (13–20 days) does not seem to have any greater neutralising value than that taken later (4 months) Comparison with pooled normal serum and with serum from convalescents of long standing shows that these also contain viricidal antibodies in amounts not significantly less than those taken early in convalescence

It is possible to collect pooled convalescent serum with a neutralising value as great as that obtained by immunising horses

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KING'S COLLEGE [illegible].—Lord Wakefield will preside over the [illegible] of this hospital [illegible] will be held on [illegible] at [illegible] P.M. [illegible] be followed by the [illegible] a new wing for [illegible] patients which has been [illegible] by friends of the [illegible] on the [illegible]

MEDICINE AND THE LAW

Perils of the Paddling-Pool

LAST August a boy entered a paddling pool in Bishop's Park, an attraction furnished by the Fulham borough council to simulate the seaside The pool was nowhere more than 2 feet deep The boy felt his foot make contact with something sharp, on coming out of the water he found his foot was rather seriously cut A park keeper bandaged him and he was taken to hospital The main ligament of the great toe had been severed, it was sutured and the boy made a good recovery He sued (through his father) for damages for negligence on the part of the borough council Mr Justice Greaves Lord found the defendants to have been at fault They ought to have known that, if not carefully supervised, the pool would become a trap They had given their park keepers instructions which, if carried out, would probably have averted the accident The glass was a danger of which the council ought to have known The park keeper had a rake with which he went over the pond and the heaps of sand alongside it The type of rake did not go deep enough The learned judge did not rule that the council must always provide supervision to prevent bits of glass from getting into the pond, but proper supervision could have prevented the accident, and there had not been proper supervision Another boy had been injured in the same place not long before An assistant park keeper knew of this earlier injury and, in breach of his instructions, omitted to report it further The council was responsible for the negligence of its servants There was prolonged legal argument over the responsibility for the child in the pool. Was he what the law calls an invitee, or was he merely a licensee, a person allowed to be present at his own risk? The court held that the boy was an invitee, the council had placed the paddling pool and the sand heaps as an attraction for children, and the judge came to the conclusion that he could take judicial notice of the fact that most children paddle with bare feet He awarded £50 damages to the child, and £19 10*s* 6*d* to the father as special damages for expenditure incurred in consequence of the injury Thus to the difficulty of keeping sand and water clean in these places to which children resort there is now added the problem of sifting the sand to see that no foreign substance with a sharp edge is present

The Doctor's Charges

A patient who had not paid his doctor's bill contended that the rate of charge was too high inasmuch as the doctor had less than 100 yards to travel when visiting him The plaintiff, a doctor at Turnham Green, was suing the defendant, a professional man, in the Mayor's and City of London Court for £3 3*s* for medical attendance, including six periodical visits The charge per visit was 7*s* 6*d* The defendant thought 5*s* would have been amply sufficient The registrar of the court ascertained that appendicitis was suspected. If, he remarked, the patient was cured without the expense and danger of an operation he was lucky Doctors, he explained, had to regulate their fees as nearly as possible to the social position of the patient He gave judgment for the amount claimed and added a fee ("it will be rather more than the 7*s* 6*d* which you disputed") for the attendance of the plaintiff doctor at the court that day As a pendant to these proceedings we may add the comments of a deputy county court judge in a Gloucestershire court a week or two ago Doctors' bills, he remarked, ought always to be the first to be paid, whereas they were usually the last The gratitude of patients evaporated in time, and the non payment of bills led to many inadequate excuses

VENEREAL DISEASE IN THE U S A

(FROM AN OCCASIONAL CORRESPONDENT)

A CONFERENCE on the venereal diseases was held in Washington just after Christmas at the call of Surgeon General Thomas Parran Delegates were present from 45 States, and the district of Columbia, Puerto Rico, Hawaii, and some ten foreign countries In all 900 delegates were registered and many others were present who did not register their names Both the attendance and the vigour of the discussions surpassed all expectations

The most practical proposal coming from the conference was that Congress should increase the $10,000,000 annual appropriation under title VI of the Security Act to $25,000,000 with the understanding that the main part of this difference is needed to combat syphilis The proposal was voiced by Dr A T McCormack, State health commissioner of Kentucky and president-elect of the American Public Health Association. Having pointed out the salient facts in the present situation one million new cases of syphilis contracted yearly, less than half of these treated effectively, adequate facilities for diagnosis and treatment rarely available to the afflicted person and public health facilities for control totally inadequate, Dr McCormack continued —

> "This nation has definitely embarked upon a program of social security It has determined that the hitherto under privileged and neglected shall be able to secure the comforts and necessities of life We have provided pensions for the blind, assistance for dependent children, care for the crippled, and in a hundred other ways are paying untold thousands of dollars for our previous and continuing neglect in the prevention of such diseases as syphilis The staggering price we have paid for our failure to control syphilis and similar preventable diseases is only of value in the consideration of the development of effective plans for public health prevention and control of such disasters In different communities, it has been clearly demonstrated that syphilis, like tuberculosis diphtheria typhoid fever, yellow fever and small pox, is a distinctly and definitely preventable disease In order to accomplish this high purpose, it is necessary to improve Federal, State and local administrative and service machinery to the end that prevention, early diagnosis and continuous treatment shall be available for every citizen in America needing service"

Dr J H Stokes spoke on the clinical treatment of syphilis, emphasising the importance of adhering to the continuous alternating system of treatment shown to be the most effective by the studies of the coöperative clinical group

> "The most refractory stage of early syphilis,' said Dr Stokes, "is the seropositive primary, and it is during this stage that most patients present themselves for treatment It is only by greatly increasing the amount of treatment called for in seronegative primary syphilis or in the fully developed secondary stage that the expectancy can be brought up to the general level Secondary syphilis treated by intermittent methods yields even poorer results than seropositive primary, but if treated by a continuous system, the results closely approximate the best obtained in seronegative primary syphilis"

Bismuth, in the judgment of Dr Stokes, has lefinitely established its superiority over mercury specially in the prevention of relapse Frequent Vassermann tests are needed to control treatment. A return to a strong positive after a series of negative reactions in either early or latent syphilis is a serious warning In every pregnancy the blood should be tested twice: first at the third month so that positive cases shall all receive treatment before the fifth month and secondly in the eighth month to detect the possible transmission of infection during pregnancy In the treatment of neurosyphilis Dr Stokes considers malaria the best means of inducing fever but considers there is not much to choose between fever therapy and the administration of tryparsamide.

The clinical management of gonorrhœa was discussed by Dr P S Pelouze who held that if syphilis is allowed to receive the most attention and so make the far more prevalent disease gonorrhœa appear a poor second in importance our citizency will be played a rather sorry trick. However Dr Pelouze did not minimise the difficulty of controlling gonorrhœa He admitted that no treatment known to day will quickly render the patient non contagious and that gonorrhœa can be transmitted to others so long as there is a single gonococcus present Since there are no laws to compel treatment of carriers of gonococci the field narrows to just what a medical mind can do with the mind of the infected patient. Pleasure loving American youth said the speaker might be divided into three groups: the conscientious patients, the indifferent and a large intermediate group who would follow treatment conscientiously only if someone took the trouble to make them understand the necessity The present need is for the instructors who will take this trouble

Dr Pelouze s paper was read on the first day of the conference and was open to discussion in section meetings on the second day No discussion was heard however in the section on public health administration where, if anywhere, it might have been expected The general impression seemed to be that while his point was well made it represented an ideal to aim at rather than a practical administrative policy

Dr R A. Vonderlehr assistant surgeon general in charge of venereal disease control, reported on the present activities of State health departments in this field Twenty five States have started new activities in venereal disease control as a result of subsidy already received under the Social Security Act. Sixteen States now administer their programmes through a separate division in charge of a full time officer Thirty seven States administer drugs or free treatment 21 provide dark field examination for diagnosis. There are about 1000 free pay and part pay clinics for the treatment of syphilis and gonorrhœa in the United States or approximately one clinic to every 130 000 of the population. The distribution of these clinics is uneven In the south where the high incidence of syphilis among the negroes makes clinics most desirable the supply is below the average Dr Vonderlehr s conception of an adequate programme includes: the appointment of a full time venereal disease control officer in every State department of health, a much more liberal policy with regard to the free distribution of antisyphilitic drugs the adoption of reasonable standards of efficiency by State health departments before formal recognition is given to clinics for the treatment of syphilis and gonorrhœa, and a much more liberal allotment of funds for direct expenditures in the control of the venereal diseases

IRELAND

(FROM OUR OWN CORRESPONDENT)

ROAD ACCIDENTS

Last year there were 9602 road accidents in the Irish Free State with 3932 persons injured and 205 deaths The number of deaths was slightly less than in the previous year (226) and the number of injuries slightly more (3817 in 1935) but the number of recorded accidents was more than doubled Of the accidents involving deaths 201 in number 71 were attributed to private cars 39 to motor lorries (including steam lorries and road locomotives) 27 to pedal cycles 16 to horse-drawn vehicles 9 to motor buses and coaches 11 to taxis and hackneys, 8 to motor cycles 5 to electric trams and 15 to motor vans and light commercial vehicles The number of deaths on the roads has increased slightly but with many fluctuations in the last six years, while the number of persons injured has increased with little fluctuation from 2870 in 1931 to 3932 last year

The number of fatal accidents in the Dublin metropolitan area in 1936 was 44 being 11 less than in 1935 Only one fatal accident was attributed to a pedal cyclist. The number of persons killed in the Dublin area is considerably below the average of the last six years but the number of those injured is above the average although less than in 1935

The returns for the Irish Free State further show that the most dangerous hour of the day on the roads is from 7 to 8 P.M The age incidence of deaths is interesting Of the persons killed 8 8 per cent were children under six years of age 18 1 between six and twenty 19 5 were between twenty and thirty 10 7 between thirty and forty 8 3 between forty and fifty 11 2 between fifty and sixty and 23 0 over sixty It is noteworthy that only 3 of the fatal accidents were attributed to drunkenness of a driver

THE MEDICAL RESEARCH COUNCIL

The personnel of the Medical Research Council of the Irish Free State has been completed by the appointment by the Minister for Local Government and Public Health of Dr Robert P Farnan as chairman Dr Farnan is gynæcologist to the Mater Misericordiæ Hospital Dublin and professor of obstetrics and gynæcology at University College Dublin (National University of Ireland)

BUDAPEST

(FROM OUR OWN CORRESPONDENT)

VESICAL CALCULI IN AVITAMINOSIS

During the National Medical Week Dr Paul Fodor read a paper in which he said that he had given rats McCarrison s vitamin A free diet He has carried on the experiments much longer than any other workers in this field, waiting for the animals to die naturally With this method he has succeeded in producing vesical calculi in 90 per cent. of the rats The stones were all secondary and infectious in origin. Every animal that had received the diet had an infection of the urinary tract *Bacillus coli* could be cultivated, and the urine gradually became alkaline Assuming a lack of vitamin A as a cause Dr Fodor investigated the vitamin level in the blood but he failed to find any quantitative deviations On the other hand the condition cannot be attributed to the lack of vitamin alone; it must be due to the interaction of several factors The avitaminosis renders the animals prone to infections and the preponderantly carbohydrate diet changes the reaction of the urine and also the conditions governing the solution of its salts According to Fodor it is the protein that is of the greatest importance in the lithogenous diet

THE PYREXIAL TREATMENT OF NERVOUS AND MENTAL DISEASES

On the same occasion Dr Stephan Somogy gave account to the experiences of the Budapest neurological and psychiatric clinics in the fever treatment of mental and nervous disease in the last 12 years on more than 1000 patients They induced pyrexia in 873 instances, with malaria in 550 patients, in 135 with drugs, and in 188 with milk injections With these various methods the following results were attained with malaria, 20 per cent were cured and 24 2 per cent improved, with Neosapro vitan, 10 per cent cured and 30 per cent improved, with Pyrifer Pyrago, 8 5 per cent cured and 30 per cent improved, and with milk injections, 12 7 per cent cured and 25 per cent improved. Thus malaria therapy proved the most efficacious Somogy holds that the hyperpyrexia itself is the most important factor In the manic depressive psychosis, schizophrenia, and epilepsy there were no conclusive results In the various other diseases the following were the results obtained In tabes only some improvement in the symptoms was noticeable, chiefly in relieving the lancinating pains and the crises, in the chronic forms of epidemic encephalitis and in disseminated sclerosis the results were poor In contrast with this the method was very successful in chorea minor, general paralysis of the insane, acute trigeminal neuralgia, acute peripheral facial paralysis, and sciatica

PRESIDENTIAL ELECTION IN THE MEDICAL CHAMBER

After disputes and discussions lasting for years the Hungarian Medical Chamber has now been constituted The presidential election took place recently and Dr Tibor Verebélyim, director of the First Surgical Clinic of the University of Budapest, has been elected, with Dr Ladislaus Csiky as vice president The council of the Chamber was elected by the representatives of the Budapest and country chambers Altogether 81 country electors sent postal votes, while the 52 Budapest electors voted personally The number of electors is always adjusted to the number of members, which is much fairer than the system prevailing in Rumania, where the medical chamber has just been introduced There the presidents of the county chambers elect the national president, so that a president of a county with only 25 members has just as much influence as one who represents a chamber with a 1000 or more

CHILD WELFARE IN HUNGARY

During the week also Prof Kornel Scholtz, Minister of Public Welfare, gave some elaborate statistics, showing that in Hungary the infant mortality in the last ten years has fallen considerably *In the new born (0–6 days)*, however, the *position* is not so favourable, emphasising the need for the more intense development of prenatal care The great fluctuation in the mortality rate of infants in the first three months is mainly attributable to summer diarrhœa, the curve of which is almost parallel with that of the maximum summer temperature Another cause is influenza, in the four influenza years of the last decade 54,913 more of the population have died than in the intervening epidemic free years, and 8600 of these were infants The death rate of children from 1–14 has been almost halved since 1920 This great improvement was due to the diminution of deaths from acute infectious diseases It is striking that while the death rate of respiratory diseases is very considerably diminished in all age groups, in tuberculosis of other organs it rose considerably at all ages A considerable improvement is noticeable also in the death rate of other groups of diseases The drop in deaths due to "congenital debility" of infants is clearly due to better medical services In this respect the chief aims of Hungarian public health are to develop better prenatal care, to augment the hospital accommodation for children suffering from acute infections, and to check diphtheria by the wider use of protective inoculation For combating tuberculosis in children arrangements are being made for the adoption of Calmette's method Finally, special care is to be taken in improving nutrition, which in some regions leaves very much to be desired, both qualitatively and quantitatively

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THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Lt Comdrs T A Cochrane and G Ronson to *President* for course, and C B Nicholson to *Pembroke* for R N B

Surg Lt Comdrs (D) D Barker to *Vernon*, and D C Eglington to *Afrikander*

Surg Lt J L S Coulter to be Surg Lt Comdr

Surg Lt M G H Heugh to *Excellent*

Surg Lts (D) S J Atkinson to *Ganges*, W G Finnie to *Vernon* for R N Hosp, Haslar A G K Heberlein to *Wildfire* C E Fitton, R A Hilton, and H W Gibbs to *Victory* for R N B, and J B Morris to *Eagle*

ROYAL NAVAL VOLUNTEER RESERVE

Surg Lts D M Dean and C Seeley to be Surg Lt Comdrs

ARMY MEDICAL SERVICES

The War Office announces that Dr H L Tidy physician to St Thomas's Hospital, has been appointed honorary consulting physician at the Queen Alexandra Military Hospital Millbank, S W, in succession to Col A G Phear, C B, F R C P, whose tenure of appointment has expired

ROYAL ARMY MEDICAL CORPS

Capt W H Hargreaves, h p list, is restd to the estabt

Short Service Commissions Lt (on prob) F T Moore is secd under the provisions of *Art 213*, Royal Warrant for Pay and Promotion, 1931

ARMY DENTAL CORPS

Short Service Commissions —The undermentioned Lts to be Capts R Edwards, A F Town R G Kett, P J Pigott, H J Burns-Jones, and W J Constantine

TERRITORIAL ARMY

Maj A H D Smith, M C, T D, to be Lt Col

Lts T H Dockrell and K M Morris to be Capts

N J Nicholson to be Lt

ROYAL AIR FORCE

Group Capt H A Hewat to Headquarters, Bomber Command, Uxbridge, for duty as Deputy Principal Medical Officer, vice Group Capt T Montgomery

Flight Lts P J McNally to R.A F Hosp, Cranwell and J F Dales to Central Medical Establishment, London

Flying Offr D S MacL Macarthur is promoted to the rank of Flight Lt

Flying Offr G B MacGibbon to R A F Station, Scampton

Dental Branch—Flight Lt J E Tyrrell to R A F Hosp, Aden

INDIAN MEDICAL SERVICE

Maj Gen A W M Harvey K H S, retires

DEATHS IN THE SERVICES

Lieut -Colonel **Francis Alexander Caron Scrimger** V C who died on Feb 13th at Montreal was the younger son of John Scrimger principal of the Presbyterian College Montreal He served in the European War as medical officer with the 14th Battalion, Royal Montreal Regiment to which he was attached from the Canadian Army Medical Service and when a captain he won the V C on April 25th 1915 for his gallantry in carrying wounded men from an advanced dressing station near Ypres which was being demolished by shell fire Later he became assistant professor in surgery at McGill University and surgeon to the Royal Victoria Hospital Montreal his special interest being thoracic surgery Colonel Scrimger married in 1918 Ellen E Carpenter late C.A.M.C and leaves a son and three daughters. He was 57 years of age

Colonel **John Maxwell Gover**, D.S O who died on Feb 11th at Nevern-square London at the age of 69 was educated at Durham University and St Bartholomew s Hospital and qualified M.B B S Durh in 1898 After house appointments at the Royal Infirmary Newcastle and the Brompton Hospital he was appointed assistant demonstrator in anatomy and physiology at the Durham College of Medicine He joined the Territorial Army and became assistant director of medical services of the 50th (Northumbrian) Division with the rank of colonel At the outbreak of the European War he was assistant surgeon to the Fleming Memorial Hospital he served from 1914 on was mentioned in dispatches, and received the D S O in 1918

PANEL AND CONTRACT PRACTICE

Medicines Urgently Required

Most insurance practitioners are aware that under the Terms of Service they are required to supply and not merely to prescribe drugs or appliances which are needed for immediate administration or application or for use before a supply can conveniently be obtained from the chemist In England and Wales the yearly rate of payment for this task is usually 1*s* 3*d* per hundred persons on the list but in some areas where the liability for emergency dressings is greater a rate of 2*s* 6*d* may be sanctioned or payment may be made at a flat rate for each occasion on which dressings are supplied in an emergency Prescriptions marked urgent which carry a double dispensing fee may be issued after the chemists shops are closed, but only if it is essential that the drug or appliance should be supplied the same day and if there is a resident chemist reasonably accessible who will make it up If there is no such chemist it rests with the doctor to supply the drug or appliance himself

An insurance practitioner recently complained that a chemist had refused to dispense the medicine he prescribed On investigation it appeared that at about 10 P.M. on Christmas Day a prescription for mist camph co of the National Formulary was issued and that a representative of the insured person called at the private house of the chemist and asked him to dispense it Not unnaturally the chemist declined The relatives then discovered the private address of another chemist who was persuaded to go to his shop and dispense the mixture shortly before midnight He in his turn was not unnaturally annoyed and informed the insurance committee accordingly And so because a practitioner had failed to make himself acquainted with his Terms of Service the patient and her friends as well as both chemists were put to inconvenience late at night apart from the unnecessary work thrown upon the insurance committee in dealing with the complaint he raised

Medical Insurance Practice

Insurance practitioners have lately received copies of the Medical Benefit Regulations 1936 which include their Terms of Service but it is doubtful whether many have the time to study these regulations exhaustively It is opportune therefore that the fourth edition of Medical Insurance Practice the excellent handbook by R. W Harris and Leonard Shoeten Sack should have been issued almost concurrently The many alterations in the regulations since 1920 when the previous edition was issued have made revision imperative and now at an almost nominal price practitioners may obtain an authoritative explanation of their duties and responsibilities written mainly in the direct second person reference to which may well settle in a minute or two those nasty little problems that are likely to arise at any time

Take for example spinal jackets which may now be prescribed when required for treatment of fractures dislocations, or diseases of the spine A footnote (p 85) points out that it has been held that a spinal jacket is necessary and required in connexion with treatment (and the original cost and cost of periodical repair may therefore be debited to the drug fund) if it is likely to restore or maintain an insured person s capacity for work but not if it is used for improving the appearance of the patient —e.g to hide a hump on the upper half of the spine

The many appendices contain information which is invaluable; such as extracts from the report of the advisory committee on the definition of drugs for the purposes of medical benefit Reference to the list of never a drug might save the annoyance of an inevitable surcharge The book is well indexed, and much ingenuity must have been expended in the compilation of this all important section The preface to the first edition addressed the book to the busy general practitioner and added that the authors while excluding matters too remote to be of interest to him had tried to avoid leaving unanswered any question arising in his daily insurance work on which he is likely to seek information in its pages Their exhaustive revision brings the book to a standard if anything higher than that of the earlier editions It is obtainable from the British Medical Association at 2*s* post free

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Fellowship of Medicine and Post-Graduate Medical Association.—A special course in physiology and anatomy for the primary F.R.C S examination will be held on Mondays Wednesdays and Fridays at 5 15 P.M at the Infants Hospital (Feb 22nd to May 24th) A course in proctology will be given at St Mark s Hospital (March 1st to 6th); in orthopædics at the Royal National Orthopædic Hospital (March 8th to 20th) in infants diseases for candidates for the D C H at the Infants Hospital (March 8th to 13th) in urology at All Saints Hospital (March 20th and 21st) M R C P courses will be held in chest diseases at the Brompton Hospital (twice weekly at 5 P.M Feb 22nd to March 20th); in chest and heart diseases at the Royal Chest Hospital (Mondays, Wednesdays and Fridays at 8 P.M March 1st to 20th); in neurology at the West End Hospital for Nervous Diseases (afternoons, March 8th to 20th) A mock trial of a motorist accused of being under the influence of drink will be held on Thursday March 11th at 8 30 P.M Admission will be by ticket only and full particulars can be obtained from the secretary of the fellowship 1 Wimpole-street W

CORRESPONDENCE

SURGICAL TREATMENT OF CARDIAC ISCHÆMIA

To the Editor of THE LANCET

SIR,—Mr O'Shaughnessy's lecture published in your issue of Jan 23rd is evidence of the admirable work done at the recently established cardiovascular clinic at Lambeth Hospital, and also at the Buckston Browne Farm. He is to be congratulated on his evidently remarkable surgical technique, as well as on the clarity with which he describes his operation and its results, and above all he is to be congratulated on being so scrupulously careful not to claim as yet to get brilliant clinical post-operative results, but rather to content himself with the demonstration that cardio-omentopexy is in his hands "a feasible operation attended with a low immediate mortality."

It is to be hoped that others may be equally cautious in their choice of cases for omentopexy, and in their claims for a successful result. For it is clear that this operation is tempting progressive surgeons. I note that cases of omentopexy were shown at the clinical section of the Royal Society of Medicine last week. The more unstable of our anginal patients already begin to demand surgical treatment. Finally, that astute and up to date journalist "Dr Harpole," has included omentopexy in his "Surgeon's Diary." In a word, these and many other portents indicate that we are in for a spate of omentopexy. But before the flood descends upon us and perhaps carries away hastily improvised barriers of clinical experience and judgment, there are a few observations which I would like to make. And if these observations seem to be somewhat elementary in nature I do not seek to be excused. For is it not true that in these days of elaborate investigations and treatment, elementary considerations are apt to be forgotten?

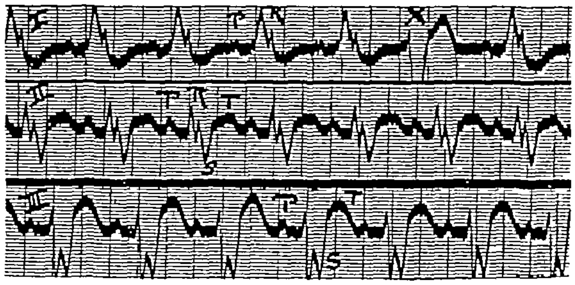
Lord Dawson has epitomised the problem in the final paragraph of his introduction to Mr O'Shaughnessy's lecture:—

> "It follows therefore that in a considerable coronary occlusion collateral circulation must eventuate if the myocardium is to be saved. *Such a compensatory circulation can form of itself*: where it does not do so, the use of surgical means to establish it is essentially reasonable and its prospect should be good in carefully selected cases *provided the capillary bed itself is not too degenerate to profit by a renewed arterial supply*."

I would like particularly to emphasise those words of Lord Dawson which I have italicised. Let us never forget that "a compensatory circulation can form of itself," and that consequently it is possible, indeed probable that some cases of cardiac ischæmia may recover in spite of, and not because of, the surgeon.

Angina pectoris is a much maligned disease. We never open a newspaper without reading of the sudden cardiac death of some distinguished individual. Thus daily it is hammered into our minds that angina is a very dangerous condition. We tend to forget that if an anginal patient lives within his limits and obeys a few very simple rules he often leads quite an active and useful life for many years. He may indeed even lose his angina and die of something else. Of James Mackenzie's 214 fatal cases,[1] for example, approximately one half survived for five years, and 44 of them lived for more than ten years—not a bad record when we find that 77 of the 106 patients who survived the five year period were already over sixty years of age at the onset of their angina! To quote Mackenzie again, "The ages at which death occurs (from angina) do not differ materially from the average at which death occurs from disease in general"—a somewhat obscure remark, the interpretation of which would seem to be that angina does not materially affect the expectation of life.

The names of distinguished members of our own profession who have done splendid work during long periods of time, though suffering from angina, leap to the mind at once. One wonders had these men been subjected to omentopexy and survived, would they have been rendered more efficient? One of my friends has suffered from angina for eighteen years. Some years ago he had a coronary occlusion. He has led an exceedingly busy professional life and is still working at the age of seventy five, and is no doubt congratulating himself that omentopexy was not the vogue eighteen years ago.



Electrocardiogram of Mr A in 1930. Bundle branch block and one ectopic ventricular beat (X).

Many of us can recall spectacular recoveries from chronic heart failure of arterio sclerotic origin. Another of my friends had cardiac asthma in 1934, with a tension of 240/140 and alternation. In 1935 he had an alarming attack of acute pulmonary œdema, and later on a transient hemiplegia. From October, 1935, till September, 1936, he was waterlogged, and his intense dyspnœa could be controlled only by morphia. A few weeks ago he came up from the country and had lunch with me, free from œdema, and sleeping peacefully at night without any sort of sedative. What a triumph he would have been for omentopexy had this been performed last spring (and had he survived it!)

One more example:—

Mr A, aged 54, was seen with Dr Brebner Scott in April, 1930. He gave a history of angina of effort and of gasping attacks at night. His blood pressure was 200/130. In August of the same year he had a coronary thrombosis after which he developed a bundle branch block (vide electrocardiogram) and became waterlogged, with paroxysmal nocturnal dyspnœa. He was nine months in bed, and for some four months his condition appeared to be quite hopeless. In March, 1931, however, he was up for half the day and in May, 1931, he returned to his business at Covent Garden getting up at 5 A.M. and working till 4 P.M. without any œdema. *He worked till September, 1932,* when he broke down again, after influenza. In February, 1933 he was still up and about and free from œdema. He died of chronic cardiac failure in King's College Hospital in May, 1934. Again what a surgical triumph he would have been if operated upon successfully, in February, 1931!

When one reflects on cases such as these—and any clinician of experience could quote others like them—one feels that after omentopexy, as in many other conditions the vis medicatrix naturæ may sometimes be responsible for a successful result

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[1] Mackenzie, J. (1923) Angina Pectoris, London.

At the same time there is no doubt that a case has been made out for this operation The difficulty is of course the decision as to when to operate One hesitates to advocate surgery so long as there is a reasonable prospect of the heart establishing its own collateral circulation and one must not wait until the capillary bed is in Lord Dawson's words too degenerate to profit We admire the surgical skill which restored the sprinting power to a greyhound a branch of whose coronary circulation had been ligated But this experiment would have been more convincing as an argument for omentopexy in man had the greyhound been ten or more years old at the time of the operation

Finally another depressing thought why is the Talma Morrison operation apparently extinct? *Pace* Prof Grey Turner I really cannot believe that it has been abandoned only because the patients will not be persuaded to become abstainers!

I am Sir yours faithfully

Montagu-square W., Feb 10th MAURICE CASSIDY

OXYGEN TENTS

To the Editor of THE LANCET

SIR,—Rather over a year ago the British Red Cross Society deposited in each of the twelve teaching hospitals of London an oxygen tent of the Guy's Hospital pattern so that a wide experience of this method of treatment might be gained We who were appointed as a small medical advisory committee would in the first place like to thank the Society for their public-spirited action, the value of which is indicated by the reports received from the various hospitals All these reports emphasise the value of the oxygen tent in the treatment of grave cases of anoxæmia One of these reports that from St Bartholomew's by Dr D C Reavell was published in your issue of August 1st and we may quote his statement that from the clinical point of view the results were better than with any previous method of oxygen administration and patients were kept in the tent continuously for periods up to 12 days without any difficulty A report from another hospital emphasised its value in the treatment of children suffering from bronchiolitis or bronchopneumonia once in the oxygen tent these small children appear to resent being taken out[1] and there is no question that this apparatus is highly successful and almost the only method of achieving the results attempted. In another hospital a child who had had one lung removed by operation was in the tent for a considerable time and the treatment proved of the greatest benefit Another report describes a girl aged 11 months, whose colour improved and who appeared much happier within about half an hour of entering the tent; the pulse rate fell and the respiration rate also fell and the child made a good recovery Another patient aged 65 with chronic bronchitis and asthma strongly objected to the tent when it was first used for him but was later readmitted to hospital very cyanosed and dyspnœic and almost moribund This time he felt so much better in the tent that he willingly persisted with it and made a remarkable recovery after some four days Later he did not remember ever having been in the tent at all It is perhaps unnecessary to multiply instances of the beneficial effect of a treatment which merely ensures that a patient is getting a known high percentage of oxygen

When the details of managing the patient are considered it is perhaps natural that there should be some difference of opinion Dr Reavell stated that the tent could be set up and new people instructed in its management in two hours when once running no undue call was made upon the house physician and apart from general supervision by the house physician it could be managed entirely by the ward clerks and nurses when once the sister and nurses had become accustomed to the tent it was little or no hindrance to general nursing Another report says that the oxygen control presents no difficulty and a concentration of 50 per cent could easily be obtained and maintained The gas analyses of which oxygen is the most important can easily be carried out and can soon be taught to sisters and nurses In one hospital it was noted that the tent could be used satisfactorily for surgical cases but in another hospital the nursing of these cases in the tent was found to be extremely difficult Several reports emphasised the difficulty of controlling delirious and fractious patients in the tent This difficulty is common to all methods of oxygen administration

Some criticism of the details of the manufacture of the tent were expressed but this is perhaps not surprising considering that it was the first time that this particular type of tent had been made up in quantity in this country and the firm employed had had no previous experience of this kind of work The chief criticism was the flimsiness of the material so that a stronger and more substantial material is now being used in all the tents that are being made at present

The Red Cross Society offered the tent to the hospitals for purchase at a little under half their original cost and seven of the hospitals accepted this offer It may perhaps cause surprise that this offer was not accepted by five of the hospitals but in four cases the refusals are thought to be due to certain technical imperfections in the tent or to a preference for a tent of another type or some simpler method In the remaining hospital the patients who had been ill enough to require this treatment were so few that it was felt that for the time being a tent could be hired when desired and that an improved model might be forthcoming later

A final word may be said about the action taken by the London County Council which controls a very large number of beds For about a year now they have had twelve tents in operation and they are hoping to increase the number so that each general hospital and each fever hospital will have at least one tent

In our previous letter we stated that arrangements had been made by one of us to send a tent to any part of the country at the request of any medical man and that a physicist not medically qualified would accompany the tent The demands on this Oxygen Tent Service" have steadily increased during the last year so that it has now been possible for it to launch out on its own account as an independent concern Applications should now be made to T W Adams A Inst P Oxygen Tent Service 33 Devonshire-street W 1 Telephone No: Welbeck 2003 and at night Gerrards Cross 1103 This service which supplies British made tents together with the two other services in London which supply American tent should be sufficient to meet all the demands for this particular type of treatment at the present time —We are Sir yours faithfully

REGINALD HILTON
W J PEARSON
E P POULTON

London W Oct 12th

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[1] This point was also observed at another hospital

THE SINCLAIR FOOT-PIECE

To the Editor of THE LANCET

SIR,—I have read with appreciation the lecture by Mr Salisbury Woods in your issue of Feb 6th on progress in the treatment of factures As one of the surgeons who worked for a time under the direction of Major Sinclair during the war, and who has followed his treatment of fractures with the greatest interest since, I feel that I must correct the reference made to the Sinclair foot-piece This foot-piece was never meant to sustain a tractile force greater than 4 lb When properly applied the strips of adhesive material fixing the Sinclair foot piece do *not* overlap on the dorsum of the foot, and the whole of the apparatus would be pulled off with a weight much exceeding 4 lb The function of the foot piece was mainly to control rotation of the foot and not to be a point for the application of weight extension to control shortening in the fractured femur It was, in fact, only an adjunct to skin traction applied to the thigh I have not seen a case of sloughing of the skin following the use of this foot piece for the purpose for which it was designed I am, Sir, yours faithfully,

London W Feb 12th H ERNEST GRIFFITHS

MEDICAL PRIVILEGE

To the Editor of THE LANCET

SIR,—May I thank you for your very helpful and sympathetic leading article dealing with my Bill on this subject, and at the same time make some comments upon the incident Both the Bill of 1927 and the recent one were drawn by a skilled legal Parliamentary draftsman The Bill of 1927, as I stated in my letter (Feb 6th, p 349), was supported by five eminent lawyers who actually added their names to my Bill The recent Bill differed from the earlier one in two particulars only it extended the operation of the Bill beyond the class of venereal diseases to which the 1927 Bill was restricted, and it added clauses providing a further safeguard against abuse Both the Bill of 1927 and the recent Bill were "passed" by Lord Atkin The 'legal snags" discovered by the Solicitor General seem to have escaped the observation of the very competent authorities I have named

Two reasons made me extend the operation of the Bill (i) As I explained in my letter to you a Bill restricted to venereal diseases would fail in its purpose inasmuch as any party pleading its protection would be at once stigmatised as a victim of venereal disease (ii) Protection of medical confidences is necessary in other branches of practice For example, certificates given by medical officers of health in the case of stillborn infants have hitherto been regarded as confidential, but in a recent case the doctor was compelled to disclose the cause of the death of the child, which conveyed a reflection upon the parents, again the case history confidentially imparted and entered upon the cards of panel patients by the doctor is not protected from revelation in a court of law In the Scottish Maternity Bill now before Parliament proper stress is laid upon the supreme importance for reducing maternal mortality of ante natal observation of the pregnant woman Maternal mortality is probably highest in the young unmarried mother and it is surely foolishly short-sighted to withhold from this class of case the most explicit assurance that their confidence will be respected, early consultation, which is one of the chief purposes of the Bill would be grievously hampered but for the complete trust reposed by the patient in the doctor respecting her professional confidences

In his defence of the monopoly by solicitors of professional secrecy as contrasted with the absence of privilege for the no less important confidences of the doctor and the priest, the Solicitor-General used the curious argument that solicitors enjoy this privilege because it has been "erected by the custom of the law," and that it would be difficult to put into statutory form the claims for similar privilege by the doctor and the priest

The perfectly indefensible and in its results widely mischievous refusal of privilege for medical confidences is producing chaos in the administration of the law I have knowledge of recent cases in which judges imbued with the obligation of the medical practitioner to preserve secrecy (as was evinced for example by Mr Justice Charles in the instance quoted in your leader) have excused the medical practitioner who has pleaded that honourable obligation from giving evidence Were a doctor or a priest to refuse to betray professional confidences and to suffer imprisonment for doing so there can be little doubt that public opinion would be outraged and would demand alteration of the law When the law is so clearly in conflict with public opinion it is surely better to alter it by orderly Parliamentary procedure rather than in response to an explosion of resentment in an individual case

I am, Sir, yours faithfully,

House of Commons Feb 15th E GRAHAM LITTLE

TREATMENT OF FRACTURE OF THE NECK OF THE FEMUR

To the Editor of THE LANCET

SIR,—Mr E T Bailey's instrument for introducing a Smith Petersen nail, described in your last issue, has given us a simple method of placing the nail with accuracy along the femoral neck I cannot, however, accept the statement that the instrument "obviates the necessity for calculations or for a lateral X ray during operation " Mr Bailey does not specify the type of femoral neck fracture he treats by his technique I will confine my remarks to the medial type of fracture, for the lateral and per trochanteric types always heal well without nail immobilisation

All extra articular operations are dependent for their success upon the accuracy of reduction of the fracture and the maintenance of this reduction until the fragments are immobilised by the nail The steps of the operation must be continuously under radiological control until the final immobilisation by the nail in the reduced position is achieved No instrument can replace this X ray control I have no doubt that the technique advised by Mr Bailey can give some good results, but these days we are most concerned in lessening the percentage of unsatisfactory results, and I feel that in advising a technique that replaces close radiological control Mr Bailey is advocating a retrograde step

Not all fractures of the medial type are reducible by traction in a Thomas splint I agree that sometimes by this method alone an accurate reduction is obtained It should be the routine method of preliminary treatment, the patient is made comfortable, nursing is easier, and it gives a period during which the patient can be investigated and the general condition improved

But there remains still a group of patients in whom accurate reduction has not been attained Most authorities are agreed that for this group there can be no routine manipulative reduction, simply because the displacement of the fragments is not constant

The manipulations necessary will be governed by the deformity remaining and the deformity is recognised only by radiograms taken in two planes. It seems wiser to carry out these manipulations on an orthopædic table instead of the complete bed procedure. With such a table the reduced fracture can be securely fixed and X ray control is greatly facilitated. In introducing the nail, unless steps are taken to prevent it the oncoming nail may displace the head fragment from its position on the neck; this is most apt to occur in the subcapital type of fracture. This displacement may not be recognised in the antero-posterior film but is readily seen in the lateral view. Accordingly X ray control must be continued until the operation is completed.

All of us with experience in this operation are familiar with its unexpected difficulties, difficulties only surmounted by planning on clear radiograms as the operation proceeds. Only by a technique allowing the fewest errors can the percentage of unsatisfactory results be lessened. The operation may sometimes be tedious to the surgeon, but under local anæsthesia it is quite a safe procedure even in the very elderly.

I am, Sir, yours faithfully,
WILLIAM GISSANE.

St. James' Hospital, London, S.W., Feb. 11th.

ARTIFICIAL PNEUMOTHORAX ON STATISTICAL TRIAL

To the Editor of THE LANCET

SIR,—Your annotation in last week's issue on the work of the pneumothorax subcommittee of the Joint Tuberculosis Council raises the whole question of the applicability of statistics to clinical problems. In the investigation you describe a committee of experts spent four years in the classification and follow-up of a very large number of patients treated by artificial pneumothorax and compared their fate group by group with control material which was admittedly not strictly comparable. The result was disappointingly inconclusive.

Needless to say, it would be a good thing to have statistical backing to clinical judgment as it is difficult for anyone who practises a special form of therapy not to be prejudiced in favour of the belief that his patients are better so treated than left alone. Even allowing for a bias of this nature, clinicians of experience are so unanimous in believing pneumothorax treatment to be of great value in suitable cases that it is worth while examining more closely the discrepancy between clinician and statistician. The cause of error does not need prolonged search; it lies in the fact that the control group consists of patients with a substantially better prognosis treated conservatively than the A.P. group.

Until recently pneumothorax was rarely tried except in patients who failed to improve with several months of sanatorium treatment, and failure to respond to treatment obviously indicates a worse prognosis than a good response. To this group may now be added a relatively small group of patients in whom pneumothorax is tried without delay, as experience has taught us that their prognosis will be much improved thereby.

Now the fault of the statistician in this inquiry is that he concentrates on the anatomical extent of the lesion, number of lobes affected, &c., and not on the direction in which the disease is progressing while the patient is under treatment. A fibrotic scarcely active lesion of one lobe in which the patient has almost established a condition of *symbiosis* with his bacilli is classified in the same group as a tuberculous lobar pneumonia. The first patient will be treated conservatively, and the second will have a pneumothorax tried with the knowledge that therein lies practically the only chance of recovery, and that this is by no means good owing to the tendency of this type of disease to spread whatever treatment is applied.

The final impression which remains after reading the report is that the position of pneumothorax remains as it was before. If anything has been tried and found inadequate it is the application of the statistical method to this particular clinical problem. One feels that the investigators have been thorough and dispassionate, but that the inherent difficulties of the problem have unfortunately prevented their achievement from being of the high value which the quality of their work merited.

I am, Sir, yours faithfully,
Harley-street, W., Feb. 15th. ANDREW MORLAND.

ANOREXIA NERVOSA

To the Editor of THE LANCET

SIR,—I was much interested in Dr. J. H. Sheldon's article on anorexia nervosa in your last issue and am impressed by his suggestion that we are dealing with a functional form of Simmonds's disease of psychological origin. In the same way I believe many cases labelled Fröhlich's syndrome are really instances of a temporary pre-pubertal obesity due to a functional delay in the development of the pituitary. I can corroborate from my own experience that anorexia nervosa is often preceded by obesity, and that being teased about this (powerfully aided by the fashionable cult of slimness) is frequently the incentive which starts the process of self-starvation. The subjects of this condition are generally feminine Peter Pans who are afraid of growing up, and now that we realise the close association between the emotional centres in the diencephalon and the pituitary gland, we can understand how the emotional state may inhibit pituitary function.

But I am still puzzled by the blood-sugar curves. Dr. Sheldon's 1st and 5th cases show practically no rise after 50 grammes of dextrose, whereas simple fasting causes the curve to approximate to the diabetic type. A flat curve indicates rapid absorption of dextrose, yet these patients do not put on weight in consequence. Different observers give very varying descriptions of the blood sugar in Simmonds's disease. H. Zondek states that it was usually within normal limits in his cases. Wolf states that sugar tolerance is diminished in Simmonds's disease, resulting at times in glycosuria. Goldzieher on the other hand considers a constantly low blood sugar and a considerable increase in sugar tolerance typical of every hypopituitary case, whether of the obese or lean type. Wilder has seen hypoglycæmic *crises* which were readily relieved by sugar. We should expect Houssay's diabetogenic hormone to be diminished with lessened anterior pituitary functions, so that a lowered blood-sugar curve is perhaps to be anticipated from the unopposed *action of insulin*. Several observers describe insulin sensitivity, but in my experience these patients put on weight more quickly under appropriate psychological treatment if also given insulin well covered by dextrose. Even dextrose alone is helpful. It would therefore appear that the mechanism for storing carbohydrate may be present even in excess of normal if only it is provided with adequate fuel. It is also possible that the loss of the normal adrenotropic action of the pituitary leads to a functional adrenal insufficiency. Demole (*Presse* *medicale*, 1936, 44, 543) gives as its characteristic features (1) asthenia without pigmentation or much lowering of the blood pressure, (2) chronic if vague digestive disturbances, (3) fasting hypoglycæmia which is converted into hyperglycæmia by the injection of cortical extract This third point might prove to be of diagnostic value

Dr Sheldon's paper certainly provides food for reflection on the influence of the emotional state on endocrine functions It is the more important because anorexia nervosa seems to be on the increase This I attribute to the increasing frequency of tension between mother and adolescent daughter, the fashionable fear of obesity, and the fear of going out into a world fiercely competitive in work and games alike I am, Sir, yours faithfully,

W LANGDON-BROWN

Cavendish square W Feb 15th

To the Editor of THE LANCET

SIR,—Many will agree with Dr Sheldon that this disease is often accompanied by changes indicative of pituitary dysfunction At the Maudsley Hospital biochemical and metabolic investigation of cases of anorexia nervosa have been carried out independently during the past year These appear to confirm many of Dr Sheldon's views The publication of the results have been delayed so as to compare them, if possible, with a series of control cases from patients having other types of psychological disorder and weight disturbance

The whole problem of loss of weight in illness supposed to be psychologically determined is of extreme interest and urgently requires investigation, work done here, for instance, has shown that many of these patients make only slow improvement even when taking a high calorie diet Anorexia nervosa provides an exceptional chance of studying the complicated interrelations of metabolic and psychological changes It is to be hoped that Dr Sheldon's paper will stimulate a very wide interest in the various aspects of this syndrome, if so, it may soon be possible to deduce observations applicable to its more satisfactory treatment

We are, Sir, yours faithfully,

WILLIAM SARGANT,
W S MACLAY

The Maudsley Hospital, Denmark Hill S.E Feb 13th

TUBERCULOUS ABDOMINAL GLANDS

To the Editor of THE LANCET

SIR,—May I now reply to some of the points raised by Dr Pask and Dr Wilkinson? The proportion of children and young persons enjoying the fresh air, sunshine, and good food in institutions who require surgical intervention is not known to me When the diagnosis is positive operation in such a patient may be avoided with an easier mind Those operated on in our series were mostly workers, many of them farm labourers, who had been well fed and had had an open air life, but not much rest Symptoms had generally been insufficient to prevent work until admission Most were actual or potential emergencies and no patient was operated on merely to make a diagnosis The tendency to the formation of adhesions in these patients is high and such an operation would not assist natural cure There is no doubt that judgment may decide in favour of operation to clear a doubtful case when a ward is receiving A waiting list amounting to double the number of beds and the knowledge that the patient will be returned if sent out unfit for work are factors which are apt to weigh The number of institutional beds available for long continued cases is not large if all doubtful cases are to be treated The serious mortality *from abdominal tuberculosis in the early years* of life leaves a type of patient with a tried resistance, which helped by restful conditions and good food, improves with time

The Registrar General's reports show a steady reduction in the annual mortality from abdominal tuberculosis in England and Wales to nearly one sixth between 1910 and 1935 (4345 persons in 1910 to 750 in 1935), presumably due to cleaner milk The corresponding mortality from obstruction has remained throughout at some 2500 persons, with a recent tendency to rise The varieties are not officially distinguished, but the commonest causes of acute obstruction in children and young adults are bands and adhesions The operative mortality in expert hands is very high

Of the 10 fatal cases in our paper 3 deaths were due to the operation, 3 to strangulation, 1 to appendicitis, 1 to hemiplegia (two years), and 2 to phthisis (three years and two years) Of 10 patients with acute and 3 with subacute obstruction, 10 recovered Ten of the reoperation cases had been initially operated on elsewhere for acute symptoms We managed to retain all our own failures in this respect, hence the large proportion There was one fistula case successfully dealt with by resection of the gut and attached caseous gland, before emaciation became severe There were two keloid scars which subsided without radiation, three ventral hernias were all successfully operated on and cured Carson pointed out that operation in caseous cases must be evaluated on the grounds of necessity not of choice

Future prevention will depend on providing clean milk at a cheap rate, on dealing with such archaic anomalies as sweeping up the dust in the tube railways instead of extracting it, on fixing the dust in railway tunnels by suitable spraying, and on greatly reducing the sojourn of the population in the tubes by having universal "zone" fares and the completed tickets available on the automatic machines Phthisical persons and carriers of other infectious diseases should be individually isolated, not herded together I am, Sir, yours faithfully,

London W Feb 15th G H COLT

DEFOE'S STORY OF THE PLAGUE

To the Editor of THE LANCET

SIR,—If a mere layman is allowed to differ from the grave and reverend seigneurs who have contributed the series Grains and Scruples may I be permitted to question the accuracy of the statement on p 1543 of your Dec 26th issue as to Daniel Defoe's story of the Great Plague being merely a journalistic account of an event of which he could know nothing, he being then, according to your contributor, a baby of two or so Though this idea was at one time held, more recent researches suggest otherwise G A Aitken, a recognised authority, gives his birth as some time in 1659 Therefore he would be six at the time of the Plague Six years of age at that period would make Defoe—who also must have been a precocious urchin—quite able to absorb lasting impressions of such a tragic time, and it would certainly seem on this evidence that his story of the Plague may be regarded as built on a foundation of personal recollections even though these are added to by consultation of the documents available

I am, Sir, yours faithfully,

Mulberry close S W Feb 10th E J HOLLAND

ENDOMETRIOMA OF THE VULVA

To the Editor of THE LANCET

SIR,—No single theory will explain the origin of all endometrial tumours of the vulva. Samson s implantation theory appears to account for such cases as that reported to the North of England Obstetrical and Gynæcological Society on Oct 30th by Mr T N A Jeffcoate (*Lancet* 1936 2 1336) in which it was most likely that endometrial cells from the menstrual blood were implanted into the raw surface of a cavity formed by the rupture of a post operative wound Other cases, occurring in women who have undergone no previous operative measures with no history of injury to the vulva and in the absence of any hernial sac can only be explained as developmental abnormalities

In the human embryo at the third month the inguinal fold can be demonstrated as an outgrowth from the Wolffian ridge The point of the outgrowth is the junction of the uterine and Fallopian segments of the Müllerian ducts within the Wolffian ridge. In the inguinal fold the round ligament of the uterus is developed and it is presumed that to use a simile of Comyns Berkeley during the building of the female genital house some chips of the Müllerian structure are carried away by the developing round ligament to find a resting place in the part of the labium in which this ligament becomes dispersed and that these chips become activated during the reproductive period of life perhaps under the influence of œstrin. In support of this explanation may be mentioned other tumours—to wit dermoid cysts of the floor of the mouth and teratoid tumours of the testicle—which rarely become clinically evident before puberty

The comparative rarity of endometrial tumours of the vulva, of whatever origin is shown by the fact that Jeffcoate, before reporting his case was able to find only six others on record.

CASE REPORT

Mrs A of Hog Eye Arkansas nullipara aged 30 first consulted us in regard to a painful swelling of one year s duration in the right labium majus on Feb 1st 1936 She described it as feeling as though there were a cockleburr under the skin which became more painful during the latter half of her menstrual period and partially subsided during the following week She believed it was a hernia, for which she had been wearing a truss for two years

On examination the inguinal region was normal The upper half of the right labium was swollen and at the extreme upper end could be felt a firm tumour approximately almond-sized Bimanual examination of the pelvic organs revealed no abnormality and there had been no change in the menstrual habit which was 28/5 Subsequent examinations at appropriate intervals confirmed the patient s history of periodicity A diagnosis of endometrioma was made and the nature of the tumour explained to the patient who readily consented to its removal for histological study Operation was performed at the Elizabeth Hospital Prairie Grove Ark on March 10th under general anæsthesia to permit of direct inspection of the right inguinal canal and abdominal inguinal ring These were seen to be normal, the incision was closed and the tumour then removed through a separate incision into the labium Recovery was uneventful and there has been complete freedom from symptoms up to the present time The truss has been abandoned

The tumour was submitted to Dr J H Fisher professor of pathology in the University of Western Ontario London Canada to whom we are indebted for his kind permission to publish his report which is as follows : Specimen is roughly spherical measuring 2 cm in diameter The outer surface presents a roughened appearance with tags of fibrous and fatty tissue attached On section the cut surface is firm greyish white with darker points and small areas scattered through it The sections show many dilated glands composed of tall columnar epithelium and surrounded by typical endometrial stroma These glands strongly resemble those of the uterine endometrium Most of them contain blood and fragmented granular material The glandular structures are embedded in a rather dense fibrous tissue with a small amount of fat

Pathological diagnosis : endometriosis

We are Sir yours faithfully

FRANK RIGGALL,
CECIL RIGGALL

Prairie Grove Arkansas Dec 23rd

TRANSIT OF PREGNANT WOMEN BY AIR

To the Editor of THE LANCET

SIR,—The question of the transit of pregnant women by aeroplanes has come up for consideration and is one of importance to the medical profession as well as to the general public Several factors are involved, such as the distance to be travelled and the facilities which exist for medical aid at the landing-grounds as well as the condition of the patient herself The rules formulated would presumably differ for those flying within European limits from those flying across Africa or Asia or to Australia and tentatively one might suggest a limit of one clear month from the expected date of delivery in the former and two months for the long-distance passengers I should be grateful to members of the profession who would give their views on this question either in the columns of this journal or in private correspondence

I am Sir yours faithfully

F P MACKIE
Colonel I M S. (retd)
Medical Adviser Imperial Airways Ltd

Feb 12th

HUNTERIAN FESTIVAL DINNER

THE biennial dinner of the Royal College of Surgeons of England was served in the library of the College on Feb 15th under the happiest auspices Immediately overhead was in progress the reconstruction of the three upper floors of the College to make a new and adequate institute of surgical research and incidentally completing Sir Charles Barry s beautiful facade The company over which Sir CUTHBERT WALLACE presided included five Hunterian trustees the treasurers of the four Inns of Court, eight masters of City Companies and the medical directors of the three Defence Forces Sir CHARLES GORDON WATSON who toasted The Guests paid special attention to Lord Russell of Killowen and Sir Plunket Barton who were sitting by him but the real guest of the evening was John Hunter whose memory was drunk in reverent silence

I like ' said Sir Cuthbert to think about three characteristics of the man First there was his curiosity This word is now perhaps of ill favour but in its best sense it describes well Hunter s childlike desire to find out how things work and caused him if not to originate to improve and amplify the experimental method Secondly there was his diligence He was a whole time worker though not in the modern sense. Hunter had a large practice the gain from which he devoted to paying for his researches He was late and early in his workroom and left himself but four hours for sleep Then there was his courage when stricken with a terrifying disease Hunter calmly continued his work and made himself an object of his own study "

And having said this Sir Cuthbert gave the welcome news that the Bernhard Baron trustees who had “thought that the President's advisers were rather optimistic in their estimates of what they could achieve for the sum named,” had decided to increase their gift of £30,000 by a further grant of £5000 in order “that your plans should be carried to complete fulfilment without financial anxiety” Sir ARTHUR MACNALTY who, in the absence of the Minister of Health, responded for the guests, spoke of Hunter as the man who had introduced the exercise of the observant scientific mind into the study and practice of surgery He recalled that his predecessor Sir John Simon, the first chief medical officer of the central health department, was at the same time President of the College His training in scientific surgery led him from the study of disease in the individual to the prevention of disease in the community Living in more leisured times Simon worked for many years at Whitehall in the mornings while in the afternoons he operated or saw patients at St Thomas's Hospital The toast of the Hunterian Orator was proposed by Sir FARQUHAR BUZZARD with a warm tribute to Mr Fagge's re presentment of the great genius of John Hilton and a word about “the need to perpetuate in our profession the mind that was in Hunter”

On another page will be found some account of the special lecture given during the afternoon by Prof G E GASK, who related unpublished facts about John Hunter's work in the campaign in Portugal, 1762–63, and of his life in a base hospital at Lisbon

PUBLIC HEALTH

Four Years' Work at the Maudsley

Dr Edward Mapother's report on work at the Maudsley Hospital during the period from January, 1932, to December, 1935, is a record of steady achievement and development As an important teaching centre in psychological medicine, the hospital receives a large floating population of post graduate and under graduate students, to meet whose needs the plan of instruction has been modified by the formation of a teaching unit Dr Aubrey Lewis has been responsible for organising the unit, and has charge, with the help of three colleagues, of nearly half the beds, so as to include patients of both sexes and all types The remainder of the beds are grouped under firms, as at most general hospitals The hospital is now recognised as a school of the University of London, professorships in the university were recently conferred on Dr Mapother and Dr F L Golla, director of the Central Pathological Laboratory

Enlargement of buildings has not only made possible the accommodation of more patients but has greatly improved the teaching capacity of the hospital. In addition to the increasing number of post graduate students attending the D P M course held each spring, medical officers from the L C C mental hospitals are seconded to the Maudsley as clinical assistants for periods of six months at a time Indeed, the report suggests that those entering the council's mental hospital service are now “provided with a series of opportunities for obtaining psychiatric education and experience which is probably unequalled elsewhere” Undergraduate teaching is carried on in Pantia Ralli ward of King's College Hospital, which has been loaned for a period of years as an annexe to the Maudsley Hospital

In this report Dr Mapother discusses the advantages of forming a neuropsychiatric unit, intended chiefly for research and teaching Such a unit would have great value in the post graduate training of psychiatrists, especially if it were possible to tap the rich supply of material in the general hospitals of the Council Other developments suggested or foreshadowed in the report are that of building a hostel from which patients could go out to work even while attending the out-patient department—a solution for those whose chief need is removal from unhappy home conditions, and that, already approved, of providing accommodation for thirty children to be admitted under the children's department

Health Indices

Chadwick in England and Shattuck in the U S A based a novel campaign upon the proposition that the health of a community was dominated by environment, this being so, the health of a community should be capable of deduction from environmental data John Billings, the great American army surgeon, was attracted to this idea of estimating the healthfulness of places, but he did not pursue the matter In 1915 Dr Charles V Chapin, of Providence (R I), interested himself in comparing the health services of various local government units and introduced the “appraisal form,” which enabled the available health services of various units to be evaluated from a score sheet The objection to such a score sheet was that the marking is arbitrary, so the sheets of different assessors were not comparable, but they had some use in detecting improvement or the reverse in the total value of health services In a recent review[1] Dr K Stouman and Dr I S Falk, of New Haven (Conn), have developed further this method of evaluating the health of communities The “health indices” which they employ are made up of the appraisal form, “indices of vitality and health” (vital statistics), and “indices of environment,” which give meteorological and social factors A typical “short list” (which nevertheless contains 78 entries) is given from the city of New Haven, comparable with the statistical part of the annual report of a medical officer of health who puts in everything which might have a say in the health of the people

The object of these health indices is to obtain statistics, standardised for as many functions as possible, in order to obtain material for working out the causes of disease, or, in other words, to obtain facts for biometry The objection to them is that most of the information, though set down in mathematical form, has a specious accuracy which may be more misleading than rough guesswork Where the information is reliable, use can be made of it in a less complicated manner Hence, for practical purposes, “health indices” will not much attract health officers who have been trained in statistical epidemiology to the point of knowing its pitfalls It would be possible for any medical officer with a large expenditure of labour, and without any research, to fill up the full score sheet of 100 indices for his district, but he would gain little from it which he did not know before, and he would find that it was precisely in those matters where his entries must be provisional or uncertain that he wants accurate information On the other hand, given this full score sheet filled in by a reliable authority for Jericho, Timbuctoo, and Los Angeles, it would be possible to compare the health and services of the three towns, and indices so obtained might be valuable to the Health Organisation

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[1] *Quart Bull Hlth Org L o N* December, 1936, pp 901-1081

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month his name can be seen later in the half yearly index

BY A ROVER

III

It was not only on account of that lapse of memory which my colleague had noticed, that I knew I had had influenza Other things had happened which made it pretty certain that the fever of a fortnight ago was of this nature. On the side of the nervous system there was depression and of a somewhat elaborate kind, not a mere feeling that life was not worth living but a change in my whole philosophy of life which tended towards the positive not merely the negative aspects of pessimism I slept a great deal but dreamed vividly an almost new experience Brain work which was largely mechanical I could tolerate but an attempt at anything which required constructive thought was painful and doomed to failure

* * *

Then there was evidence that the heart was poisoned. The effort syndrome was definitely recognisable I chose the lift (when available) rather than the stairs even to reach the first floor—a practice I had hitherto scorned both as a time-saving device and for exercise I let the porters carry my bag I didn't mind it being thought that I was getting on in years so I invited people to help me on with my overcoat I walked more slowly than usual, even on the level. On one occasion I forgot and lifted the foot of a bed containing a pretty heavy woman whilst the nurse put blocks under the castors I had a heart ache for two days afterwards Two or three nights I woke with irregular action of the heart and, though my clinical sense told me the disturbance was of the nature of extrasystoles my depression whispered gloomily about fibrillation, the indication for an E C G and the propriety of suspending tobacco (which in any case gave much less satisfaction than usual) and coffee

* * *

And *again there was that tiresome cough* which seemed so meaningless since there was no catarrh and yet which was so greatly influenced by temperatures *effort, food and posture*

But the fever itself could scarcely have been anything else than influenza The epidemic was on the onset was abrupt, I had one horrible night during which my mind threshed through the hours trying vainly to link up paroxysms of a most painful tracheal bark with a dream-state from which I woke (as it seemed) dozens of times (How true despite the nurse's report is that asseveration of our patients that they haven't slept a wink all night) What other disease all said and done the duration of the acute stage of which may be only 48 hours can effect such a devastating change in the equilibrium of body and soul? We say that we have no criteria by which to judge what is influenza Rubbish! An infection which produces all this disturbance and yet may yield no physical signs *is* influenza And it is not the work of a mere coccus or bacillus either

* * *

The more we become familiar with diseases due to infection by filtrable viruses the more confirmed are we that the specific infection in influenza is of this nature Some of us held this view strongly even when B Pfeiffer had such powerful adherents Experience of psittacosis for example illumined the darkness considerably Here we saw a combination of a typhoid like state with a spreading form of pulmonary inflammation associated with bronchiolitis and œdema In the 1918–19 epidemic of influenza or rather amongst the more severe cases which occurred just before and just after the main wave of morbidity we saw the typhoid like cases both with and without, pulmonary symptoms and we also saw the pulmonary cases with their peculiar cyanosis extensive congestion of the lung and bloody sputum The memory of my first case of fulminant respiratory influenza (in 1918) remains vividly in my mind, especially the peculiar *cyanosis* The colour of the face reminded me of the only case of aniline poisoning I have ever seen—a medical student who *got a shock when he saw his face* in the mirror one morning He had been applying an aniline preparation to an inflamed ear But he *wasn't ill.* I *couldn't* place the young woman with the heliotrope face and the generalised bronchiolitis because I had neither seen such a case nor heard of it *How easy the diagnosis* is to-day!

* * *

Measles *is almost certainly another virus infection* Of all the common acute exanthemata it is the most likely to lead to serious nerve symptoms such as *encephalitis and myelitis*

I suppose it was some such inductive reasoning as this that led Sydenham to his conception of "epidemic constitutions"—that famous battleground between the bacteriologists and the epidemiologists Hippocrates it was who started the idea for he like Sydenham, loved to generalise from particulars For Sydenham it was the disease rather than the patient that possessed the constitution We are warned by some of those who are reluctant to let outworn notions die—when those notions were the product of the thought of great men—not to consider ideas that seem to us to be nonsense to-day to have been nonsense at the time they were uttered. The point is rather that these great men would, in the light of our present knowledge throw overboard their own notions much more quickly and entirely than do their reverent but slavish disciples. *Microbiology* gives the answer to the riddle that faced all the physicians however great their genius down to the time of Pasteur We are *told that there may* still be pearls to be had for the searching in the writings of Sydenham and those who followed him But the pearls are surely the *persistence of the man* and his painstaking work in the face of the fact that the key to his difficulties was hidden from him and could not be revealed until *new tools opened* up new methods of inquiry The same may be said of Hunter and of others whose genius came so near to finding the answer to the *riddle It is clear from careful* study of their writings, that they did not deceive themselves into believing that they had solved the essential problem *inherent in most diseases*—what *is* it that disturbs the equilibrium of the body and leads to that complex series of changes revealed in the study of the *sick man? Pasteur and Lister* and Koch following Leeuwenhoek gave the answer and the science of Infection was born

PARLIAMENTARY INTELLIGENCE

THE FACTORIES BILL

On Feb. 11th in the House of Commons Sir J. Simon, Home Secretary, moved the second reading of the Factories Bill. He said it was 30 years since any comprehensive measure for amending our factory code was last enacted by Parliament. While, of course, some useful and important amendments and extensions of our factory law had been made since that time, for example in 1907 and 1916, and a very important change in 1920, and again in 1929, still the main factory code remained the code of 1901. It was therefore high time that a new and improved code was passed, not only consolidating but amending and improving the existing law. Both the National Confederation of Employers' Organisations and the General Council of the Trade Union Congress had been consulted before this Bill was drafted and while therefore there would be a number of points in Committee on which there were sure to be differences of view, he was justified in anticipating that on much of the Bill there would be found to be a very large measure of agreement.

The questions of health were dealt with in the Bill in Parts I, III, and IV. These provisions involved in many respects a real advance. The first clause was important in that it made more precise the present law by including specific provisions in regard to the removal of accumulations of dirt and the cleaning of floors, which in many factories needed very careful attention. In Clause 2 they dealt with the important question of overcrowding and the standard of air space to be allowed. They wanted in principle to secure an increase in air space from 250 cubic feet to 400 cubic feet, which was the standard existing to-day in the best-appointed factories. The difficulty was to get the change rapidly made in the smaller works in certain industries. Adequate ventilation was as important as adequate air space. The proviso in Clause 2 was designed to secure, if possible, that existing works should comply with the new standard as soon as possible, but they were to be given time to do it. In the meantime they emphasised the importance of effective mechanical ventilation being provided, if a room was crowded. The existing factory code made no provision for ensuring proper lighting. The lighting clause in this Bill was an entirely new provision. Important new powers were also conferred under Clause 11. At present there was no power to require medical supervision in a particular works to meet a special emergency. For example, suppose there was an outbreak of anthrax during some process, or dermatitis, or sepsis, or conjunctivitis. There was no power now in the factory code by which the medical officers of the Department could say that there must be an investigation to find out how these outbreaks had occurred. In the same way, there was no power at present to meet cases where there was reason to apprehend that some substance was being employed that was likely to be injurious, the injury being caused through the material, or through one of the materials used. Again, there was no power at present to secure proper investigation with a view to stopping the injury in cases where young persons were being put on work which it was thought might prove too much for them.

It was high time to provide in the factory code that in cases of that sort it should be the right of the authorities to introduce, if necessary, medical supervision with a view to discovering what was the explanation, to stop the cause if they could, and to throw light on what might be a very obscure cause of trouble. Clause 11 would give the Secretary of State power to require reasonable arrangements to be made for the medical supervision of the workers, or any class of workers, either in a particular factory, or in any class or description of occupation. Part III of the Bill dealt with welfare provisions. There were certain welfare provisions already in operation. One might say that welfare work was an outcome of the war. It was intended to extend and make much more precise the welfare provisions contained in the Act of 1916. The existing provisions for the removal of dust were not adequate and they wanted to make them much stronger; that was done in Clause 46. New provisions for the control of underground workrooms in factories were included in Clause 51. Clause 54 was an entirely new and important provision; it was designed to protect people in the matter of lifting weights which were too heavy for them. Clause 48 dealt with the romantic operation called "shuttle-kissing"—that was to say threading the shuttle by mouth suction. That must be an objectionable practice and it was desirable to discourage it, although the information of the Factory Department of the Home Office did not go to show very definitely that any particular disease was thereby developed.

It was an extraordinary thing that the earliest Factory Acts made no provision about safety. It was largely due to the earlier factory inspectors going about their work that effective attention was called to the dreadful accidents due to unfenced machinery. It was in 1844 that provision was first made for promoting safety in factories and such provision had been steadily extended. This Bill took advantage of later experience and tightened up the whole code. In 1924 there were 312 accidents due to unfenced shafting, of which 44 were fatal; and in 1934 there were 164 accidents of which 21 were fatal. That illustration showed how much could be done if proper protective measures were taken. Accidents also occurred in connexion with tin rollers of ring spinning frames used in the cotton industry. In three years 1912–14 there were 52 such accidents; in 1913 the Home Office secured agreement about a definite standard of fencing for this machinery. The result was that this particular type of accident had been practically eliminated. In some years not one accident had been reported due to tin rollers. There were a great many other instances, such as accidents due to the failure of cranes, and accidents connected with electrical appliances, and he was satisfied that the tightening up of the regulations and rules on this subject would materially reduce accidents. The figures for accidents among juvenile workers showed a disturbing tendency to increase. In Clause 20 there were some important provisions which definitely prohibited young persons from cleaning what was called prime movers, which meant the sources of power, or transmission machinery in motion. Clause 15, which allowed access to unfenced machinery in certain circumstances, had the effect of prohibiting any person other than a male of over 18 from having anything to do with unfenced shafting. The Confederation of Employers had been induced to send out a circular to all the factories of the country calling attention to the disturbing feature of accidents to juveniles and embodying suggestions for reducing such accidents. The reports received by the Home Office showed that many firms were taking the action suggested, and it was important to watch the statistics to see how far these steps and the provisions in the new Bill resulted in the rate of juvenile accidents being reduced.

Taking the years 1924 and 1934, which were really comparable for this purpose, there was undoubtedly an improvement in the total number of accidents. In 1924 the total was 170,000, of which 956 were fatal. In 1934 when the numbers employed were about the same, the total was 136,800, of which 785 were fatal. If they took accidents connected with machinery, which was perhaps the most useful test, they found that they fell from 35,450 to 28,000, so that they could fairly say that the total accident rate had fallen in those ten years by about 20 per cent. In this Bill the Government proposed to introduce a tter system in regard to hours of work. They roposed to lay down for women and young persons at the maximum working week, the normal working eek, should be 48 hours They had to make some rovision for overtime but whereas under the isting law an employer could work a woman or oung person for a period of overtime every week ver and above the 48 hours—in the case of non textile ctories they could be worked for 12 hours overme every week, a total of 624 hours overtime in e year and in the case of a textile factory they ould be worked for the normal 48 hours and another hours in the week, or 300 hours overtime in the ear—it was now proposed to improve the law by miting the amount of overtime substantially As he Bill was drawn it provided that there might e as much as 100 hours of overtime, but they could nly be worked in a limited number of weeks he hought 30 in the year and there could not be more han 6 hours in any given week. At present it was ossible for women and young persons to work ntil 4 o clock on Saturday afternoons. Under this ill 1 o clock on Saturdays would be the closing ime as far as women and young persons were oncerned.

Summing up the measure Sir J Simon said that hat the Government were trying to do was to evise the industrial code which controlled the working ife of some 7 000 000 men women and young persons hey were engaged in framing what though it might ot be a perfect scheme would prove he thought n improved charter for their protection against ccident and undue fatigue and for promoting not nly industrial health and safety but greater ndustrial efficiency and prosperity The general dministration of the new law would be in the hands of an enlarged body of factory inspectors At present they had not enough inspectors

Mr. CLYNES said in many respects they could praise the provisions of the Bill but their praise must be balanced by criticism and by some blame He would describe the Bill as proposing to make a large number of small changes but avoiding the great issues and the big questions of factory reform There was a real demand for a substantial reduction of hours and the demand had been internationally expressed. Lately in the House of Commons there had been insistence on Parliamentary action to secure improved standards of physique and sums of money were to be provided to that end He (Mr Clynes) preferred that problems of improved health standards and physique should be handled at the source He would improve the conditions of employment, making them humane and lighter than much industrial work now was Conditions in our factories and workshops did not assist fine physical development He hoped in the Committee stage the Home Secretary would give a willing ear to appeals for the lowering of the hours of work. In the view of the Labour Party overtime ought to be more severely limited or abolished The provisions in regard to overtime in the Bill were on the whole too generous to the employers and unjust to a large number especially of women workers The Labour Party on the Committee stage would strongly resist overtime for young persons and women. He was a little disappointed that Sir J Simon had failed to give any definite indication of the extent to which the number of factory inspectors was to be increased for the whole value of this measure would depend on the watchfulness and supervision and activities of the factory inspectorate A serious omission from the Bill was that no proper rest in the year was secured for the average worker by means of holidays The Labour Opposition approved the general purpose of the Bill and accepted it as being in principle something that had been too long delayed

Viscountess ASTOR said that in many ways this was a splendid Bill but it was their duty to help the Government to make it an even better one Sixteen per cent of the children who entered our elementary schools were physically defective and they were going to be allowed to go into factories at 16 and to work a 48 hour week with overtime She did not think that they would get the blessings of the factory inspectors for juveniles who worked nine hours a day under modern conditions. Many people objected to women in industry being classed with children; it was perfectly absurd If women were of a certain age and strength and wanted to work overtime in the same way as men she did not see why they should not do so, but she objected to young persons up to 18 being worked overtime These children got tired and then accidents happened She hoped that the Government would agree in Committee to limit the hours to 40 per week. The amount of gross overwork imposed on young persons was incredible in these days If we were to stop the falling birth-rate and be an A1 nation we must protect our young peoples The time was ripe for raising the age for the entry of children into factories to 15

Mr MANDER said the Liberal Party would support the second reading of the Bill The measure however was by no means heroic it needed strengthening while showing a substantial advance in many directions the Bill indicated a retreat in certain directions It was deplorable after the Washington Convention that the Government had not taken this opportunity of amending the law in regard to the hours of work for men The question of working hours was a health question; long hours of work affected men just as they affected women He hoped that they would be able to improve the Bill in Committee

After further debate,

Mr SHORT said that since 1918 we had just tinkered with this problem. We were lagging considerably behind other countries so far as many labour laws were concerned This Bill was stamped on almost every page with the word compromise —compromise with the employers, but not with the workers; compromise with vested interests but not with humanity He could not regard the Bill as a great reform It was not a great charter but a disappointing measure But though he was critical of what he considered to be the failing of the Government in this Bill to deal with the bigger issues, that did not mean that the Labour Opposition would not coöperate actively to ensure that the measure was improved in Committee

Mr WEDDERBURN Under-Secretary of State for Scotland said that the Government were grateful for the generally favourable reception which had been given to the Bill As to the question of the 40 hours week, it had never been the purpose of factory legislation in this country to go beyond the limits of what was considered necessary to ensure the safety and the health of the workers in the factories Factory legislation here had never dealt with measures which could only be justified on general social and economic grounds as for example, the extension of leisure beyond that minimum which was necessary for health and safety A Minimum Hours Bill would be part of the policy of the Minister of Labour and would not be relevant to the functions of the Home Office He hoped that the House would not think that the Government anticipated that the maximum hours of overtime permitted by the Bill were likely to be normal The Bill did a great deal to restrict the overtime which was allowed by our present law The question of annual holidays with pay was inevitably connected with rates of pay and remuneration and it would therefore be outside the scope of the Factory Acts The Government quite appreciated and shared the general desire that working conditions generally should be in advance of the minimum requirements laid down in this Bill but it was not the function of legislation to prescribe compulsorily what was regarded as the optimum standard It was the purpose of legislation to ensure that the conditions which were decided on and which were approved by public opinion and settled by the great majority of workers and employers should not be vitiated or taken advantage of by a minority who did not choose to recognise these generally accepted standards and attempted to derive advantage for themselves by refusing to observe them.

THE MINISTER OF HEALTH

The debate was resumed on Feb. 15th when Sir **KINGSLEY WOOD** commended the Bill to the House because he said many of its provisions embodied that advance in national health policy which was rightly occupying so much attention to-day. Whilst it was right to continue efforts to cure illness and physical defects, more should be done to prevent them. Many people looked forward to the time when doctors would be paid when people were well, and fined when they were ill. There was no doubt that incapacitating sickness and accidents in industry were still heavy, and much of it was avoidable. "Public Enemy No. 1" was colds and influenza, which accounted for about 25 per cent. of absences from work. The medical profession had not yet found an instant remedy for these. Some of the best safeguards against disease and illness, especially of a minor sort, were, in addition to shorter hours and longer holidays good housing, airy schools good food, clean streets, and open spaces. But the efforts could not stop short outside the factory door, and much could be done in promoting the health of the working population by more medical supervision and more welfare provisions.

The need of further statutory provision for the lighting of factories was clearly established, for conditions in many places were far from satisfactory. Clause 5 of the Bill provided that there should be suitable and proper lighting in every factory and for every part of the factory. The Home Secretary would have power to define by order what was adequate and suitable illumination for factories or processes, and certain minimum standards would be laid down.

Under Clause 11 there was an important development towards assisting preventive medicine. Under the existing Act there was power to require medical examinations as a permanent arrangement in codes of regulations for dangerous trades; but it would be of great value to employers and workers that arrangements for medical supervision could be made from time to time in particular works and in certain circumstances. He had in mind cases where there might be an outbreak of dermatitis where irritating substances were being used, or where there had been an introduction of new chemicals likely to be injurious to the workers, or where an outbreak of anthrax was suspected. In such cases the Home Secretary could make special regulations requiring reasonable arrangements to be made for medical supervision of the health of the people so employed. This would be a useful provision for protecting the health of the workers and for reducing short time. The Home Secretary would also be able to make special arrangements requiring reasonable medical supervision of young persons who might be employed on work that might cause risk of injury to their health. Some of the welfare provisions in Clause 8 should also have an important bearing on the general health of the workers. There was to be suitable accommodation for workers' clothing, with arrangements for drying wet clothes. He also attached importance to the facilities laid down for the seating of women, in preventing excessive fatigue and ill-health. Clause 46 made an important modification of the law with regard to the prevention of injurious affections of the lungs. The new provisions required workers to be protected not only against the breathing of dust or fumes of an injurious or offensive character, as under the present law, but also against the breathing of any kind of dust to a substantial extent.

The suggestion that the Bill should prohibit the employment of women in factories during the last six or eight weeks of pregnancy raised a matter of great difficulty and complexity. The British Medical Association had put forward certain views on the matter but the Association's memorandum said there seemed no valid reason why a pregnant woman should not perform some work of a suitable nature up to the last week or two of pregnancy, and that it would be a hardship if cessation of factory work were to be made compulsory. One of the difficulties was that if it were to be made a penal offence for a woman to be employed in a factory for a stated period before confinement, it would be quite impracticable to penalise the employer and the penalty would have to be imposed on the woman herself. Then there arose the question of who was to determine the period of pregnancy. A good many women would resent a compulsory prohibition of the kind suggested, and it must be asked whether such a prohibition might not have a bad effect by discouraging a woman from availing herself of antenatal services at an early stage of pregnancy.

The Bill also proposed, by amendment of the law and by administrative action, to improve the medical arrangements for the examination of young persons by the certifying surgeon. The certifying surgeon would in future be required to give a positive certificate that the young person was fit for employment, and not merely the negative certificate that he was not unfit. Steps were also being taken to ensure a greater measure of coördination of the various State health services. The Bill made the important provision that Education Authorities should supply the school medical history to the certifying surgeon. By that means, the surgeon would have before him the whole medical history of the person being examined. On behalf of the local authorities he (Sir Kingsley Wood) could say that they were anxious to coöperate in the efficient enforcement of the provisions entrusted to them by the Bill. The Bill would mean a great betterment in the health and conditions of many millions of industrial workers.

MEDICAL VIEWS

Sir F. **FREMANTLE** said that from his considerable experience of inspecting factories in this country they were usually speaking temples of health. It seemed to him that they were on the line of general steady progress in this matter. He hoped that the Government's proposals for physical recreation would be a complement to the provisions for increased leisure, though he did not believe that long hours were necessarily detrimental to health. Monotony, too, had been found in certain circumstances to be preferred by the workers, because it involved less mental concentration. Sir Kingsley Wood had referred to the control of ventilation and temperature in factories, but he had forgotten two other essentials to comfort—the humidity and the movement of the air. The katathermometer, which showed the effect of these, was not yet generally used in the factory system. An advance had been made in the appointment by the Home Office of certifying factory surgeons responsible to them and not to the educational or sanitary authorities. For these the title examining surgeon was very suitable. A medical officer was needed whose job it was to study the health conditions all the way through the factory and to make suggestions about the worker, the conditions of the factory, or the processes as far as they affected health. The difficulty in employing local medical officers on the grounds that secret processes had to be guarded from competitors ought to be overcome. Properly appointed officials would never be guilty of revealing secrets of any kind. There ought to be a much closer connexion between the factory medical officers of the Home Office and the local medical officers of the health and educational authorities than was aspired to in this Bill. Under the Bill a dossier from the schools was to be passed on to the examining surgeon who would examine the children going into industry and that was a good provision. Though he had suggested that the medical officer who had been examining the child during the whole of his or her school life was the best qualified to decide whether the child was fitted for factory life He regarded this Bill as only a temporary measure while they were thinking out a way of improving the general liaison of the health services Industrial medicine had become vitally important to industry and to the health of the nation and must be under specially trained medical officers Hitherto industrial medicine had been entirely left out of the general education of the medical man but there was growing up a generation which was studying this question He was afraid however that the ordinary medical men in the country were not being properly trained for what he believed would be the duties which would be cast upon them in the future

Sir ERNEST GRAHAM LITTLE urged that a larger measure of medical supervision should be provided under the Bill He did not think that there was any medical reason why they should differentiate between men and women in the Bill he would like the division simply to be between adults and adolescents the latter of course requiring some age qualification Special measures might be called for on account of age but not he submitted of sex with one exception that of pregnancy Pregnancy ought to be regarded as in the nature of an illness and treated according to the individual case They ought to legislate with some attention to basic facts He would plead for much better medical service in factories. The chief inspector of factories made a very impressive statement in 1932 when he said that they had come to the limit of usefulness in devising gadgets to prevent accidents and more consideration should be given to the personal factor That was borne out by statistics One could predict that a certain group of persons would have accidents It was the same in cases of idiosyncrasy Out of the total number of disabilities which caused absence from work in factories practically one-half were due to external irritants and disease of the skin By far the most important industrial accident or disease was cancer which was on the increase all the time and it was not notifiable. In the last three years there were 535 cases and 123 deaths The cases of cancer referred to in these reports arose from two causes—oil and tar Oil of course was the lubricant used in the cotton industry and it was the cause of an extraordinary large mortality In the last report of the Registrar-General the figure for the mortality from cancer produced by oil was 4 per 1 000 000 of the ordinary population but among cotton spinners it was 131 per 1 000 000 It had been ascertained that the production of the disease by oil depended upon the nature of the oil —the heavier the oil the more cancer it produced and experiments which had been tried in Manchester chiefly showed that these oils could be identified and that it was possible to determine beforehand what would happen if a certain oil was used A formula was now available which could be very easily applied and by which it was possible to determine before a particular oil was used what was likely to result from its use in the matter of cancer production and the injury to the skin caused thereby Although that information had been quoted in the medical press for the last three or four years he saw no mention of it in any of the factory inspectors reports This information had been passed on to the body which dealt chiefly with petroleum manufacture The incidence of cancer caused by tar was 1 per 1,000 000 of the general population but in the case of tar workers it was 665 per 1 000 000 and in the case of chimney-sweeps who were subject to somewhat similar conditions it was 531 per 1 000 000 The opportunity afforded by this Bill to increase the amount of medical supervision should not be lost Medical supervision should be provided for all workers irrespective of age or sex

UNDER SECRETARY S REPLY

After further debate Mr GEOFFREY LLOYD Under-Secretary Home Office replying to the debate said that the provisions in the Bill in regard to medical supervision gave an important new power It enabled the Home Secretary in several circumstances to see that there was undertaken proper medical supervision on certain processes He (Mr Lloyd) would give the House an illustration as to how useful such a power would be Fortunately they had one or two examples where medical supervision had taken place not compulsorily but voluntarily A few years ago there were developments in some of the factories making accumulators for motor-cars which led to an increase in lead poisoning They had a considerable number of cases—over 100 in one year—and being progressive they approached the Home Office which arranged that there should be medical supervision in these works. A young doctor was put in charge of the work and he went into it very scientifically Immediately there was the slightest indication of lead in the body the man was either taken off the work in which lead was used or a radical alteration was made in the processes from the point of view of the elimination of lead Owing to the measures that were taken the cases of lead poisoning dropped rapidly and during the last three or four years there had been in one factory only one or two cases at most and in the others none

The Bill was read a second time without a division

The financial resolution in connexion with the Bill was agreed to in Committee

THE TREND OF POPULATION

A Dangerous Decline

In the House of Commons on Feb 10th Mr CARTLAND moved —

> That this House is of opinion that the *tendency of the* population to decline may well constitute a danger to the maintenance of the British Empire and to the economic well being of the nation and requests His Majesty s Government to institute an inquiry into and report upon the problem and its social and economic consequences and to make recommendations in regard thereto

He said that this problem was not merely political and social but it also affected medicine psychology economics and morals From expert estimates of the future population it would be possible to draw a picture of this country in a hundred years time with derelict villages silent factories empty schools and with only perhaps the hospitals and almshouses filled

This problem was not only one of the future it had risen to-day and three facts were incontrovertible The birth rate had been falling steadily and consistently since 1875; and within three years the number of births for the first time would no longer exceed the deaths Secondly even if every child born to-day were to live to maturity the birth rate would still not be high enough to maintain the population at the present level; there were not sufficient females being born to replace the mothers Thirdly a serious alteration had taken place in the age of the nation the youth dwindling and the aged increasing in proportion. Would the programme and policy that the country was putting into operation to-day relieve or aggravate these circumstances? The spread of birth-control methods was not the sole explanation of the decline because it did *not* answer the question why those methods were being used The whole tendency of modern life was towards small families and too often the standard of life had become a standard of luxury but he did not believe that even that was absolutely incompatible with an increased family While national economic circumstances had *affected* to some extent the fluctuations of the birth rate they had never affected its trend. Another serious matter was the growing number of females and juveniles employed in modern industry What was going to happen when the stream of these became a mere trickle? The death rate had been pretty steady since *1910* and could hardly be lowered appreciably and even through the maternity services the trend would not be reversed

That had been going in the same direction since 1875. The nation was on the edge of an abyss. There was still time to climb back, but the situation was very dangerous.

Mr **SANDYS** seconded the motion. He said that the problem of declining population was not confined to this country, but concerned Europe, the United States and the British Dominions. In China and India the population was slowly increasing and it was estimated that in Russia it would be doubled to some 320,000,000 before there was any likelihood of a decline. It was true that the population in this country was still growing because of the remarkable decline in the death rate, which had fallen from 22 in 1871 to 11 in 1935, though the birth-rate had halved itself in that time. Very little difference had been made, however, in the expectation of life of adults, for in a man of 65 it had increased since 1871 only by some nine months. The change had been in the extremely satisfactory decline in infant mortality, the deaths in the first year having fallen from one in seven live births in 1886 to one in twenty in 1935, but further improvement was still necessary. The decline in our population, however, could never be arrested merely by continued reduction in infant mortality. He went on to quote forecasts of the future population showing how, if present tendencies were maintained, in sixty years' time 64 per cent. of the women in this country would be beyond the child-bearing age, and how the population of England and Wales would in a hundred years have dwindled to a mere 4,500,000. By 1976 children under fifteen would have changed from 10,000,000 to 4,000,000, people over 65 from 3,000,000 to 6,000,000, and the age-group 15–45—with the bulk of the nation's workers—from 21,000,000 to 12,000,000. As a remedy there were two alternatives open—to forbid birth control by making it illegal, which he thought would be a retrograde step, or so to alter social and economic conditions as to make people want to have large families, a course which would commend itself to all. They were asking for an inquiry to be held and action taken at the very earliest possible moment. If the present tendency was allowed to continue unchecked action that to day would suffice to remedy the entire situation would in ten years be totally inadequate.

Mr **PARKER** said that a marriage bounty policy was not likely to cure the population problem in this country. The first thing was to convince people that to maintain the race was of itself desirable. Secondly, it had to be made worth their while to do so by providing better maternity services and proper nutrition, care, and education of children, and a certainty of a job when they grew up. And thirdly, and most important, the danger of war had to be eliminated.

Mr R. **ACLAND** believed that it would be wholly improper to oppose birth control. Other nations had tried that wholly without effect. He urged that birth control clinics, or rather children's clinics, should be encouraged, for otherwise unhealthy methods might be exploited. The first work of the committee of inquiry, which he hoped the Government would appoint, ought to be to investigate the different causes of childlessness. He thought the fear of pain and maternal mortality were important factors as well as the whole economic and political environment.

Sir **FRANCIS FREMANTLE** said that long before contraceptive methods were introduced the decline had begun. It was not merely one in quantity but in quality, for as he looked back on the large families he had known it was not the eldest but the younger sons who had taken the highest places in their careers. Therefore, by a continued decline in the birth rate an immense amount of quality and ability would be lost. This country was thus losing the power to compete with other countries. He asked the House to remember the great labours in 1913 of the National Birth Rate Commission, under Bishop Boyd Carpenter and its valuable reports in 1916 and 1918. He thought that the time was ripe for a further overhauling inquiry, and although they could not expect a very great deal from it.

After further debate, Mr **HUDSON**, Parliamentary Secretary to the Ministry of Health, said that the Government proposed to accept the motion before the House and to make or, rather, to continue their investigation. Some hon. Members in the debate had painted appalling pictures of the steadily declining birth-rate. The interesting fact was that since 1933 for the first time in history it had remained stable in this country for four years in succession. Mr Cartland quite rightly saw that contraceptive methods were the means and not the cause of the decline—an important distinction. It was very difficult to reach any considered opinion on this problem with the information at present at their disposal. A very large preponderance of persons in the prime of life at present was due to an excess of births at one time which must inevitably be followed by an excess of an older age group. The juvenile population to-day sprang from years with a low birth-rate and the number of old people was the result of an earlier time—and this was the reason for this enormous bulge in the centre age-groups. He thought the estimates of the future that were being made to-day by certain statisticians were possibly as wide of the mark as those that were made a hundred years ago, with the knowledge they then had of the trend of population. The Government welcomed this debate, and proposed to intensify the inquiry which was continuously taking place. It was clear that this intense investigation might lead to interesting conclusions. They hoped to obtain sufficient information to indicate what their policy should be.

The motion was agreed to.

INSANITY AND DIVORCE: NEW SCOTTISH BILL

In the House of Lords, on Feb. 11th, Lord **ALNESS** moved the Second Reading of the Divorce (Scotland) Bill, which extends the grounds on which decrees for divorce may be granted in Scotland. He said that the first ground for divorce in the Bill was that of desertion and the second insanity. The period provided by the Bill during which the insanity must subsist was three years. The majority report of the Royal Commission held that insanity (1) defeated the purpose of the marriage relationship, (2) made marriage as a contract impossible of fulfilment, (3) lay outside the reasonable contemplation of the parties at the date of the marriage, and (4) differing from all other bodily disorders involved the removal of the insane person and so brought to an end every phase of marriage. Some of the most tragic cases in social life had occurred in consequence of this supervening malady. The first of two objections that had been taken to insanity as a ground for divorce was that the afflicted person might recover. The evidence before the Royal Commission established that after five years the cases of recovery were only 1 per cent., and after three years a very slightly higher rate. Moreover, in these rare cases of insanity it was surely, eugenically and otherwise, undesirable that the parties should resume cohabitation and should breed. Insanity might recur at any moment. Again, it was objected that lunacy was a misfortune, not a fault. That was true, but, divorce decrees were not given as punishments. There were in Scotland 20,000 insane persons confined in asylums. The Board of Control had not been able to provide him with the precise figures of those who were married, but it could not be disputed that there were at any rate thousands. The evil was therefore widespread. It was important to recall that divorce on the ground of insanity was the law in New Zealand, Scandinavia, Czecho-Slovakia, and Portugal. The late Lord Birkenhead had stigmatised the present system as savage in conception and devastating in its consequences. The change proposed in the Bill was one that was in obedience to the profoundest considerations of social policy

Other grounds for divorce under the Bill were cruelty penal servitude after a sentence to that effect or a commuted death sentence conviction three times of a crime since the marriage and within 5 years of the raising of an action of divorce and sentence of imprisonment for not less than 6 months the crime involving either dishonesty or personal violence; and habitual drunkenness

Lord **MacMillan** in supporting the Bill said that although lunacy had not hitherto been a ground for divorce in Scotland it had commended itself to the Royal Commission

Lord **Strathcona** said at that stage he could not express either approval or disapproval of the principles of the Bill It must rest with their Lordships to decide according to their convictions.

The Bill was read a second time

Cruel Films

In the House of Commons on Feb 11th Sir **Robert Gower** presented the Cinematograph Films (Animals) Bill, a measure to prohibit the production or exhibition of films depicting suffering to animals or in the production of which suffering may have been caused to animals. The Bill was read a first time

QUESTION TIME

THURSDAY FEB 11TH

Unemployed Men at Papworth Settlement

Mr **Rowson** asked the Minister of Labour if he was aware that young men from the distressed areas and from Government training centres who were not suffering from tuberculosis themselves were being employed in Papworth workshops Cambridgeshire and were working side by side with persons suffering from tuberculosis and if he would consider the advisability of discontinuing this practice —Mr **Ernest Brown** replied Yes Sir I understand that 24 men who were trained at Government training centres, as well as a considerably larger number of other non tuberculous men are at present employed at the Papworth Village Centre These men were informed before they took up employment at Papworth that they would be working in a settlement for tuberculous persons and recruitment is on a voluntary basis. My right hon. friend the Minister of Health will deal more fully with the medical aspect of the matter in reply to a later question but I understand that there is no special risk of infection, and in these circumstances I do not feel justified in refraining from giving suitable men from the training centres the opportunity of taking up employment at Papworth if they so wish

Mr **Rowson** Is the right hon gentleman aware that the men claim that they have been deceived into going to Papworth and would like to get away as early as possible and they have been told that they will not be discharged and that they dare not leave on their own ?—Mr **Brown**: I am not aware of that The work that is going on at Papworth is a valuable and wonderful experiment

Mr **Tinker**: Might not the fact that they work in these surroundings make them feel that it has some influence on their health ?—Mr **Brown**: That question does not arise

Mr **Shinwell**: Cannot the Government devise more suitable schemes for training men than those in which the men run some risk of infection ?—Mr **Brown** I have answered the question on the Paper —Mr **Shinwell** Would the right hon gentleman answer the questions a little more clearly ?

Sir **Francis Fremantle**: Is it not a fact that every precaution, practically speaking is taken at Papworth, and that there is practically no risk in these people working side by side with one another

Mr **Rowson** then asked the Minister of Health if he was aware that young men from the distressed areas and from Government training centres who were not suffering from tuberculosis were being employed in Papworth workshops, Cambridgeshire and were working side by side with persons suffering from tuberculosis and if he had obtained the opinion of his medical experts as to whether or not this practice from a health point of view was desirable and should be allowed to continue —Sir **Kingsley Wood** replied Yes, Sir These young men work in hygienic workshops and also in the open air They are aware before they come that they will be employed in a tuberculosis village settlement They do not reside there The tuberculous patients are under constant medical supervision and are trained in the necessary precautions to guard against conveyance of infection Under these circumstances, I am advised that no special risk is involved

Mr **Rowson** Is not the sole purpose of setting up tuberculosis sanatoria the prevention of infection and contagion, and if that is the case what is the use of sending tuberculous cases there and putting non T B men side by side with them on the same bench ?—Sir K. **Wood** I do not think there can be any objection These men go quite voluntarily and as far as any risk is concerned they are just in the same position as the medical staff and the nurses and other people associated with them

Mr **Rowson**: If this is not regarded as a tuberculosis colony now is it regarded as an ordinary commercial institution competing with other businesses of a similar character on the basis of cheap labour ?—Sir K **Wood**: No, Sir My opinion, as the hon Member has asked for it is that this is an excellent institution doing a fine piece of work.

Mr **Mabane** Are not these questions calculated to damage the sale of admirable goods manufactured at Papworth workshops which are in a perfectly hygienic condition and are rendering a great service to disabled men ?

Alleged Press Persecution

Sir **Assheton Pownall** asked the Home Secretary whether he had now heard from the Newspaper Proprietors Association and the Newspaper Society in answer to his recent communication to them with regard to recent complaints against certain press representatives —Mr **Lloyd** replied: My right hon. friend has received communications on this subject from the Newspaper Society the Press Association Limited and Reuters forwarding resolutions passed by these bodies The Newspaper Proprietors Association informed my right hon. friend in a letter dated Feb 4th that the Association have decided to appoint a committee to investigate and recommend any steps which may be necessary to secure the end in view "

Replying to Lieut-Commander **Fletcher** who asked if the Home Secretary was contemplating any action in the matter Mr **Lloyd** said no doubt his right hon. friend would wish to consider the replies he had received from the associations concerned

Protection of the Public against Air Raids

Sir **Nicholas Grattan Doyle** asked the Home Secretary what steps he proposed to take for the protection of the public in those areas in which the local authority had refused or failed to take precautionary action against the effect of air-raids —Mr **Lloyd** replied These areas will share in the benefit of general precautionary measures taken by the Government but this will not compensate for the future of any district which is liable to attack to take effective measures on its own account and I trust that all local authorities will see their way to coöperate with the Government in this matter I am glad to take this opportunity to say that the number of local authorities who are not coöperating is now seven and not eight as indicated in my reply on Jan. 28th as the Borough of Ilkeston is prepared to assist in the preparation of protective schemes

Bogus Charities

Sir **Nicholas Grattan Doyle** asked the Home Secre[illegible] whether his attention had been called to the great [illegible] bogus charities and house-to-house collections [illegible] whether with a view to removing these frauds [illegible] public, he would introduce legislation for the com[illegible] registration of collecting charities, as had been [illegible] the case of war charities and of charities for the [illegible] Mr **Lloyd** replied: My right hon friend has [illegible] complaints from time to time of the activities of [illegible] charities especially of some which make house-to-[illegible] collections The compulsory registration of collecting charities was carefully considered by a Departmental Committee which reported in 1927, but the Committee decided not to recommend the institution of such a system Legislation introduced in 1929 to implement recommendations of this Committee for an alternative measure of control failed to pass into law, and my right hon friend cannot hold out any hope of fresh Government legislation on the subject

Extensions to Southmead Hospital, Bristol

Mr KELLY asked the Minister of Health what was the area of the land recently purchased for £11,500 from the Bishops Monk Horsfield estate trustees by the Bristol Corporation for extensions to Southmead Hospital, what number of patients the extension to the hospital was likely to accommodate, and whether the land in question was formerly agricultural and therefore exempt from local taxation —Sir KINGSLEY WOOD replied I am informed that the area of the land at Southmead Hospital which the Bristol Corporation have agreed to purchase, subject to my consent to the necessary loan, is about 24 acres and that the extensions at present proposed by the Corporation include the provision of 100 beds for patients The answer to the last part of the question is in the affirmative

Experiment with Sub-Standard Recruits

Mr DAVIDSON asked the Secretary of State for War the total weekly cost, per head, involved in the recent experiment to bring recruits, previously declared unfit, up to military physical standards —Sir V WARRENDER, Financial Secretary to the War Office, replied The extra cost over and above that of a normal recruit was 3*s* 2½*d* a week for each man This does not take into account the overhead expenses which, although not appreciable in respect of the small numbers involved, would be considerable if the experiment were applied on a large scale

List of Approved Societies

Sir ARNOLD WILSON asked the Minister of Health whether he was aware that the last-published list of approved societies related to the year 1930, and whether he would consider issuing it annually in future as a Parliamentary paper available to members free on application and not, as at present, on payment —Sir KINGSLEY WOOD replied A new list of approved societies is already in course of preparation It has not been found necessary to issue this list at intervals of less than five years as the changes from year to year are relatively unimportant

TUESDAY, FEB 16TH

Public Health Law in Scotland

Mr WESTWOOD asked the Secretary of State for Scotland if he was aware of the desire amongst local authorities in Scotland for the consolidation of Local Government Statute Law relating to public health, and what action he proposed to give effect to the desires of the local authorities —Mr ELLIOT replied I am aware that Scottish local authorities have expressed the desire for the consolidation of the law relating to public health I have every sympathy with their views and I am keeping the matter before me in my consideration of the report of the Committee on Scottish Health Services

Vagrants and 'Red Biddy" Drinking in Scotland

Mr WESTWOOD asked the Secretary of State for Scotland if he had had time to study the report of the departmental committee on vagrancy in Scotland particularly Chapter III, paragraph 28, which dealt with the methylated spirit and Red Biddy drinkers and the addicts to even worse concoctions, if he had considered the recommendations contained in Chapter XII paragraph 152 for dealing with these addicts, and if so, what action if any, was proposed to give effect to the recommendations —Mr ELLIOT replied The report is under consideration As stated in the report, the drinking of methylated spirits Red Biddy and other such concoctions is not confined to vagrants The recommendation in paragraph 152 that vagrants addicted to such practices should be compulsorily detained raises a very wide question which requires careful consideration.

A NEW FORM OF U-V LIGHT METER

Mr J R Ashworth, D Sc, of Rochdale, has devised an instrument for measuring the ultra violet rays of the atmosphere, using a wedge of wire gauze The instrument is contained in a metal box 6¾ × 3½ × 1½ in, in the lid of which is a sheet of glass opaque to visible rays but permitting rays between 3000 and 4000 Angstrom units to pass Beneath the glass is the wedge, lying in a tray which has 12 holes corresponding to 12 steps of the wedge, the tray covers a piece of sensitive photographic paper The thick end of the wedge is nearly opaque to the rays whilst they print themselves strongly at the thin end, the intensity of the rays being measured by the number of printed spots to be seen on the paper The proper qualities for a wedge are these it must be transparent to U-V rays and of a material able to withstand for an indefinite time exposure to strong light, variations of temperature, moisture, and other external influences, it must be reasonably accurate step by step, and it must be capable of being reproduced exactly and with facility These conditions are fulfilled by using wire gauze The wedge is built up by placing over the first layer of wire gauze another layer one step shorter, over this again another one step shorter than the last, and so on. It follows from the mode in which the wedge is constructed that if the fraction of the rays which passes one layer is f, then that which passes the second superposed layer is f^2, and that through the nth layer is f^n, hence the logarithm of the intensity is proportional to the number of spots observed on the sensitive paper, and the ratio of one step to the next is the same at any part of the scale The increase of intensity which each step represents is such that about 20 steps include the extremes likely to be met with An instrument made on these lines may be had from Messrs Negretti and Zambra A table of intensities corresponding to any given number of spots is supplied with the instrument and no calculations have to be made when the instrument is in use The spots are read in a good light as soon as the paper is taken out of the meter and no chemical treatment or washing is required. If the intensity of the ultraviolet rays is very great the twelve steps of the wedge may be insufficient for its registration, but by superposing on the wedge extra layers of wire gauze, of the same mesh as in the wedge, the range of the meter may be extended to any suitable degree The instrument is designed to receive rays from the sky covering an angle of 45° around the zenith when the surface of the glass is in a horizontal plane Daily observations are recommended, but the effects on the sensitive paper are cumulative and several days' exposure will give a reading equivalent to the sum of the separate days Photographic paper of appropriate sensitivity is supplied with the meter and can always be repeated of the same standard The instrument is strongly constructed and will stand prolonged exposure to hot or cold or wet weather without deterioration The Department of Scientific and Industrial Research has reported favourably upon it and the instrument is now in use at Southport, Salford, Rochdale, and other places

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GLASGOW ROYAL INFIRMARY —The cost of building the new nurses' home at this hospital is, it is stated, to be met by a contribution from the Lipton Trust and will form a memorial to Sir Thomas Lipton The home is to be built in Cathedral square and is expected to cost over £100,000 The chairman pointed out that if the recommendations of the Scottish Health Services Committee were adopted they would carry the voluntary hospitals into close coöperation with the local authorities "We would welcome coöperation but as business men and good citizens we dread the waste caused by competition in this important field of public service" The ordinary expenditure of the Royal Infirmary last year was £118,424, which excluded capital expenditure

OBITUARY

THEODORE HARTMANN JUST M.B Camb F R C S Eng

Theodore Just who died on Feb 13th after a prolonged and distressing illness will be widely missed and St Bartholomew's men past and present have special cause to mourn the loss of a friend whose virile enthusiasm in work and play made him a prominent figure in hospital life Born in 1886 he was the only son of Sir Hartmann Just K C.M G C.B of the Colonial Office He was educated at St Paul's where he gained both academic and athletic distinction He was capitation scholar foundationer Smee prizeman and John Watson prizeman. He was in the Rugby football fifteen for three years being captain in 1904; he rowed in the school four and he won the athletic challenge cup in 1904 and 1905 It was during his time at St Paul's that Just first became known to his friends as Father an affectionate nick name which has stuck to him throughout his career

[Photograph by Hay Wrightson

MR. JUST

From school he went to Trinity College Cambridge, with an exhibition and took a first in the natural sciences tripos thence to St. Bartholomew's Hospital, where even in his early days as dresser to Sir Anthony Bowlby he was marked *as a man of outstanding ability* as well as keenness. He qualified M.B B Chir in 1912 became Sir Anthony's house surgeon and as such displayed the enthusiastic and untiring devotion that was to distinguish his subsequent professional activities Then as later it was common for him to spend the whole night by the bedside of an ill patient watching for the moment when surgical intervention might be essential A further period as house surgeon this time to the throat nose and ear department brought him under the influence of Mr Douglas Harmer who stimulated in him a lasting interest in this branch of surgery Before he specialised however he gained more general experience as demonstrator of pathology still at St Bartholomew's and was holding this post and also working in the throat department at the outbreak of the war Just joined up immediately and was in France by the end of August 1914 serving as bacteriologist and then as surgeon specialist After the war he returned to his work in the pathological department and in 1920 took his F R C S Shortly after this he was appointed assistant surgeon to the Throat Hospital Golden square and in 1922 soon after his marriage to Alice Marie daughter of H B Mactaggart was made aural surgeon to St Bartholomew's He also held appointments as aural surgeon to the National Hospital Queen square to the Alexandra Hospital for Children Swanley and to the Lord Mayor Treloar Hospital at Alton the Foundling Hospital the Harrow Hospital and the West Suffolk Hospital. His surgical work was thorough careful and well judged and he never spared himself the effort of providing opportunities for the cheerful talk which brings encouragement to the patient awaiting operation or recovering therefrom It was this sympathetic quality joined to ability that brought him success in practice

To Theodore Just's prowess at school in athletics and games we have already referred At the *university he soon made his name as an exceptional* half miler He represented Cambridge against Oxford in 1907 as second string when he ran third and was awarded his half blue In 1908 he reached his peak as an athlete; he got his full blue and won the Inter *Varsity half mile in 1 min. 55 8 sec.—a time that has* only twice been beaten In the same year he won the A.A.A half mile championship and represented Great Britain in the Olympic Games in the half mile and in the 1600 metres relay race He was elected president of the C U A C *for the 1909 Inter* Varsity sports and was beaten by inches by Stormonth Darling At St Bartholomew's he was the main stay of a team that won the Inter Hospital Athletic Shield and also played three-quarter in the Rugby fifteen In later years he became a keen golfer and was a well known and popular figure at Denham Golf Club He took a most enthusiastic interest in all the games at the medical school and was highly gratified to be elected president of the St Bartholomew's Athletic Club shortly before his death.

Theodore Just enjoyed his work as much as he did his leisure hours in the open air or at his home He infected his companions with his cheerful philosophy of which the memory will survive

Dr Geoffrey Evans writes: We who work at St Bartholomew's Hospital have lost a real friend in Theodore Just He came to us with a great athletic record and throughout his hospital career he maintained his keen interest in athletics He played for the hospital in the Rugby fifteen and won prizes in the inter hospital athletic sports more recently he occupied the position of president of the hospital athletic club He will be greatly missed *also in the masonic world* In 1930 he was Master of the Rahere Lodge and this year of his death he occupied the Chair of the Chapter We shall miss him in his professional work, which was of the highest order His natural simple manner endeared him to children and he *had already reached the first rank* in his special department as an aural surgeon To his contemporaries Theodore Just was a most lovable man and his nickname of Father Just gives an indication of his kindly way and the affection that was felt for him.

W S PAGET TOMLINSON M D Liverp F R C P Lond

Dr Paget Tomlinson's career as a medical practitioner ceased in 1880 when he succeeded to family estates But he remained both a student of medical affairs and an exponent of the medical outlook in local government and social service; and he leaves not only a fine record of devotion to duty but also a series of achievements that were essentially the fruit of medical experience

Born 88 years ago, the youngest son of Thomas Paget, he entered the Royal Infirmary School of Medicine at Liverpool in 1866, later going on to University College Hospital in London After a few months in Berlin and Vienna he settled in practice at Blundellsands, on the Mersey, and remained there 18 years, until the death of a relative brought him a change of home, of name, and—which was by no means welcome—of occupation He had to assume the functions of a Westmorland landowner, and within a few years he was High Sheriff of the county, but his interests were not confined to the more decorative offices or to his own estates He early joined the county council and was chairman at various times, and for long periods, of its agricultural and diseases of animals committee, of its school medical inspection committee, and of its public health committee His methods included persuasion by example thus he arranged, on his own account, for the dental care of every child in Kirkby Lonsdale for two years—an experiment demonstrating much better than mere words the necessity for appointing a county dental surgeon The 28 years during which he presided over the school medical inspection committee covered the development of the school medical service from nothing at all to a large organisation, he was, says one who worked with him, "an ideal chairman. To each of us he was like a father, full of interest in our work, happy and serene in his outlook on life" He was a keen naturalist, with special knowledge of birds, and he circulated among Westmorland school children a book he wrote for them, "Kindness to all Created Things" His liking for young people also led him to give his services to particular schools for a time he was a governor of Sedbergh, since 1908 he had been chairman of Queen Elizabeth School at Kirkby Lonsdale, and for 32 years he was chairman of Casterton School A more personal memorial however, is Meathop Sanatorium, the first tuberculosis sanatorium for the poor to be established in this country, which was opened in 1900 at the instigation of Dr Paget-Tomlinson and the late Dr W Rushton Parker This institution he supported largely from his own means, and many other local buildings and charities have benefited from his discerning generosity A musician and singer, he was choirmaster at the Kirkby Lonsdale parish church and a mainstay of the choral society A friend says of him that "he was the happy possessor of many gifts which he delighted to share with others"

Dr Paget-Tomlinson was elected a fellow of the Royal College of Physicians of London in 1927 and received the degree of LL D from Liverpool on the centenary of the medical school in 1934. He married, in 1874, Margaret, second daughter of Dr J Llewellyn Price of Standish The eldest of his sons died three weeks before his father, the survivors of the family are a daughter and two younger sons, one of whom is Dr E E Paget Tomlinson of Kirklington

ALBERT SOPHRON SIEGER, L.R C P Edin, D P H

The death of Dr A S Sieger on Feb 4th has removed from Clydeside one of the most popular figures in the shipping circles of the port of Glasgow Wherever he went in the course of his official duties as port medical officer he made friends and kept them, and this genial habit and his interest in yachting and cricket will not soon be forgotten

Dr Sieger was born in 1875 at Greenock where he was educated at the Glebe School and the Kilblain Academy, later he went to Glasgow to study medicine, and took the triple qualification in 1899 For some months he was engaged in general practice, but before the end of the year he was appointed senior civil surgeon to the military hospital at Devonport under Surgeon-General G Evatt, C B, M D, and served there until 1901 From Devonport he went to South Africa in the same capacity and was stationed at Kimberley, Wynberg, and East London in the last stages of the Boer War Returning to this country in 1902 he decided to devote his energies to public health work, and in 1903 he took his D P H at Edinburgh In December of the same year he was appointed assistant port medical officer under the Glasgow Port Local Authority, a post which he held for 33 years At the outbreak of the late war he was transferred to Ruchill fever hospital and later acted as superintendent of Shieldhall fever hospital Towards the close of 1915 he joined the R.A M C and was for a short time attached to the Redford Barracks at Edinburgh, then he went to Malta, and later to Alexandria, where he served as embarkation medical officer In 1919 he was demobilised with the rank of captain and resumed his service with the Glasgow Port Local Authority as port medical officer and, after 1920, inspector of aliens Dr Sieger was a prominent member of the Association of Port Sanitary Officers and had looked forward to the forthcoming meeting of this association at Glasgow with the arrangements for which he was actively concerned He leaves a widow and three children

JAMES MAXWELL WARNOCK, M D. Belf

Dr J M. Warnock, assistant medical officer of the Ards District Hospital, died at his home in Newtownards on Jan 31st He was a student of the old Queen's College, Belfast, and graduated in the Royal University of Ireland in 1906, taking his M D in 1910 After qualification, he worked for a time in Nottingham, and then settled in private practice at Newtownards He was appointed medical officer to the Union Infirmary on the death of Dr R C Parke in 1912, and by his conscientiousness and hard work earned the respect of medical men in the district A native of Kirkcubbin in the Ards peninsula, he was genuinely attached to the locality and its people, and he had a discerning taste for music The manner of his death bore testimony to his devotion to duty Falling a victim to influenza he was urged to take a holiday but refused on the grounds that he could not run away from his practice in the middle of an epidemic Soon after resuming work he took ill with broncho pneumonia and died within a few days He is survived by his wife, two sons, and a daughter

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INTERNATIONAL HOSPITAL ASSOCIATION —The fifth International Hospital Congress will be held in Paris from July 5th to 11th Prof Roussy (Paris) will give a lecture at the first session on the care of the cancer patient in the hospital At the second session various aspects of hospitals and nursing in France will be dealt with, while at the third session there will be a discussion on how the hospital can increase its income and reduce its expenditure without detriment to its work At the fourth session the methodical organisation of hospital services will be considered, and the last two sessions will be devoted to short papers and discussions The secretariat of the congress may be addressed at the offices of the Direction Générale de l'Administration de l'Assistance Publique, 3, Avenue Victoria Paris IV, or through Mr Sydney Lamb general secretary 87, Lord street, Liverpool, 2

MEDICAL NEWS

University of Cambridge

The Raymond Horton Smith prize for the best thesis of 1935–36 has been divided between Dr Frank Goldby and Mr John Gray M Chir

The faculty board of medicine have coöpted Dr H Morley Fletcher and Prof F R Fraser as members of the board.

Royal College of Surgeons of England

A meeting of the council of the College was held on Feb 11th, with Sir Cuthbert Wallace the president in the chair Sir Charles Gordon Watson was appointed Bradshaw lecturer and Sir Charles Sherrington O.M was appointed Thomas Vicary lecturer for this year

Diplomas of membership were granted to W J C Crisp and to the candidates given in our issue of Feb 6th p 361 and diplomas in tropical medicine and hygiene to the candidates mentioned on p 362 Diplomas in medical radiology were granted jointly with the Royal College of Physicians to G G Binnie Frederick Constant Mary J Cronin and J M. Lees Diplomas in anaesthetics were granted jointly with the Royal College of Physicians under the special conditions of the regulations, to Harry Richards and R D Pramanik.

The following L.C C hospitals were recognised for the six months surgical practice required of candidates for the final fellowship examination: Dulwich St Giles Camberwell; St Olave s Rotherhithe Fulham St Leonard s, Shoreditch Mile End; St Alfege s Greenwich St Andrew s Bow; St James Balham Lambeth; Lewisham St Mary Islington St Charles Ladbroke-grove St Mary Abbot s Kensington Bethnal Green and Hackney but candidates who wish to qualify for admission to the final fellowship examination *by holding a resident post at one of the above* L C C hospitals are required to produce evidence of the suitability of such post before accepting the appointment

Conjoint Examining Board in England

The *following hospitals were added last year* to the list of institutions recognised by the Board:—

For the D.A —Kettering and District Hospital, North Middlesex County Hospital, West Middlesex County Hospital Oldchurch Hospital, Romford, County and City of Perth Royal Infirmary and Hospital for Sick Children Great Ormond street (under *special* conditions)

For the D C.H —Belgrave Hospital for Children, Clapham; Evelina Hospital for Sick Children, Southwark Hospital for Sick Children, Great Ormond street, Paddington Green Children s Hospital; Princess Elizabeth of York Hospital for Children, Shadwell, Queen s Hospital for Children Hackney Royal Waterloo Hospital for Children and Women South Eastern *Hospital* for Children, Sydenham Victoria *Hospital* for Children, Tite-street Alder Hey Hospital for Children Liverpool Booth Hall Hospital for Children Manchester; Jenny Lind Hospital for Children Norwich and St. Mary's Hospital Portsmouth

For the D L O —East Suffolk and Ipswich Hospital Radcliffe Infirmary Oxford Royal Hospital Wolverhampton and Royal Infirmary Doncaster

For the D O.M.S —East Suffolk and Ipswich Hospital; Royal Infirmary Doncaster and Sussex Eye Hospital, Brighton

For the D.P.M —Erdington House Birmingham

For the D T.M & H —Usher Institute Edinburgh

St Vincent Association

A house dinner will be held on Friday Feb 26th at 6.30 P.M., at the Old Cheshire Cheese Fleet-street London E.C Afterwards Mr Hector Hughes K C and Dr F W Crossley Holland will speak on some legal aspects of medical representation

Science and Building Exhibition

This exhibition which is to be held at the Building Centre 158 New Bond-street London W from March 1st to 25th *is being arranged by the Department of* Scientific and Industrial Research It includes exhibits by the Building Research Station the Forest Products Research Laboratory the National Physical Laboratory the Water Pollution Research Board the Department s Chemical Research Laboratory the Non Ferrous Metals Research Association, and other bodies Cinema films will be shown during the course of each day and lectures have also been arranged for certain evenings

University of Manchester

The following appointments are announced Dr P M. Crowe assistant lecturer in mental diseases; Dr F A. Gill special lecturer in mental diseases; Dr H. B May assistant lecturer in bacteriology; Mr H G Watkin, senior lecturer and clinical demonstrator in orthodontics; Mr A W Moule lecturer and demonstrator in clinical dental surgery Dr O H Adderley assistant bacteriologist in the routine section of the department of bacteriology and preventive medicine

Society of Public Analysts

A meeting of this society will be held on Friday March 5th at the Chemical Society's rooms, Burlington House Piccadilly W at 5 45 P.M at which Prof G Barger F.R.S will deliver an address on the alkaloids of ergot

Course in Psychological Medicine

The second part of the course of instruction for a diploma in psychological medicine which has been arranged by the London County Council and is being held at the Maudsley Hospital, Denmark Hill S.E will start on March 1st and continue till May 28th Further information may be had from Prof F L. Golla hon director of the medical school at the Maudsley Hospital

Post graduate Work at Aberdeen

A course of post-graduate study will be held at Aberdeen Royal Infirmary Forresterhill, and Aberdeen City Hospital *from April 20th till June 17th.* The lectures and demonstrations will be given at 3 15 P.M. on Tuesdays and repeated at the same time on Thursdays Further particulars may be had from the secretary of the University

Demonstrations of Contraceptive Technique

On Wednesday March 3rd at 2 30 P.M a practical demonstration of the technique of the use of a variety of contraceptive methods will be given by Mrs Marie Stopes D.Sc. and Dr *Evelyn Fisher* Application for tickets from medical practitioners and senior students should be made to the hon secretary of the Society for Constructive Birth Control 108 Whitfield-street London, W 1

National Association for the Prevention of Tuberculosis

The 23rd annual conference of this association will be held in Bristol on July 1st, 2nd and 3rd The association may be addressed at Tavistock House North Tavistock square W C

Physical Recreation Committees

The Government has appointed a national advisory council and a grants committee for England and Wales in connexion with physical training and recreation The 31 members of the council include Lord Aberdare (chairman) hon. treasurer of the National Association of Boys Clubs the Hon Edward Cadogan, chairman of the Juvenile Organisations Committee of the Board of Education (deputy chairman); Mr Philip Noel Baker M P; Lord Burghley M P; Sir Noel Curtis Bennett hon. treasurer of the National Playing Fields Association Lord Dawson; Brigadier General Sir Wyndham Deedes Major A H A Gem organiser of physical training under *the* London County Council; Mr I D Innes D Sc chief education officer for Birmingham; Sir William Jenkins M P; Sir E K Le Fleming chairman of the Council of the British Medical Association Miss Margaret Morris, principal of the Institute of Margaret Morris Dancing Miss *Dorothy Round*; Miss I *Spafford* secretary of the Ling Physical Education Association and Mr W W Wakefield M P The first meeting of the council will take place on Wednesday March 3rd

The Grants committee will consist of Sir Henry Pelham (chairman) Mrs R C *Assheton* and Mr J C *Fuller* The secretary of both bodies will be Captain L. F Ellis to whom all communication should be addressed at Queen Anne s Chambers Tothill-street London S W 1

London School of Hygiene and Tropical Medicine

The annual malaria control course for laymen will be held at the school (Keppel street, W C) from June 21st to 25th under the direction of Sir Malcolm Watson The following additional lectures have also been arranged Mr H H Clay, water supplies (June 22nd at 2 15 P M), and conservancy and sewage disposal (June 23rd at 2 15 P M), and Dr G P Crowden, insulation against heat and cold (June 24th at 2 15 P M)

St Charles' Hospital, Kensington

On Feb 12th Lord Snell, chairman of the London County Council, opened the new nurses' home at this hospital Hitherto many of the nursing and domestic staff and two of the medical staff have been non resident owing to lack of accommodation Other arrangements were also unsatisfactory—the sitting room accommodation for nursing staff was inadequate lectures were held in a part of a ward partitioned off for the purpose, and there was no room for training probationers in practical work The new home, which accommodates 121 nursing and domestic staff, is a four storey building connected with the main administrative block by a paved footway All floors are served by a passenger lift The bedrooms are of the larger size decided on as a standard by the council in July, 1934, and each bedroom is fitted with a lavatory basin with hot and cold water and a built-in wardrobe cupboard For certain of the senior nurses a small sitting room is provided adjoining the bedroom Large common rooms are also provided for nurses and for sisters Bathrooms, shampoo rooms, tea making rooms, and box rooms are provided on each floor, and on the first floor there is a small laundry for the personal use of nurses There is also a lecture theatre, demonstration room and library for probationers Existing buildings have been adapted to provide accommodation for five assistant medical officers, the matron, and the assistant matron The total cost is about £38 425

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Infirmary—Hon Asst Physician

All Saints' Hosp , Austral street West square, S E—Res H.S at rate of £100

Army Dental Corps—Eight Commissions

Baghdad, Royal College of Medicine.—Prof. of Pathology, £150 per mensem

Bangor, Caernarvonshire and Anglesey Infirmary.—Sen and Jun H.S £150 and £100 respectively

Bath, Royal United Hosp—H S to Ear Nose and Throat Dept , at rate of £150

Belfast, Forster Green Hosp for Consumption &c—H P at rate of £150

Birmingham Dudley road Hosp—Jun M O at rate of £200

Birmingham Romsley Hill Sanatorium—Res Asst M O at rate of £240

Birmingham Selly Oak Hosp—Jun M O at rate of £200

Blackburn Royal Infirmary—Cas O £175

Bradford Royal Eye and Ear Hosp—H S £160

Bradford Royal Infirmary—H S , at rate of £150

Bradford St Luke's Municipal General Hosp—H P 's and H.S s, each at rate of £150

Brighton, Royal Sussex County Hosp—Cas H S £120

Brighton Sanatorium and Infectious Disease Hosp—Jun Res M O at rate of £250

Bristol Eye Hosp—Hon Asst Ophth Surgeon Also Jun H.S at rate of £100

Bristol Royal Infirmary—Clin Anæsthetist to Dental Dept £150

Burton-on-Trent General Infirmary—H P and Cas O £150

Cambridge Addenbrooke's Hosp—H.S at rate of £130

Cardiff Prince of Wales Orthopædic Hosp—H.S and for Country Branch at rate of £200

Cardiff Welsh National School of Medicine—Four Scholarships £250 £200 and £150

Carlisle Cumberland Infirmary—Res M O s at rate of £175 and £155

Central London Ophthalmic Hosp Judd street W C—Sen and Jun H S s £120 and £100 respectively

City of London Maternity Hosp City road E C—Asst Res M O , at rate of £80

Croydon General Hosp—Hon Asst Surgeon to Ear Nose and Throat Dept

Denbigh County—Deputy County M O H and School M O £700

Derby Derbyshire Royal Infirmary—H S Also Cas O and Orthopædic H S each £150

Douglas Isle of Man Noble's Isle of Man Hosp and Dispensary—Res H S £175

Dreadnought Hosp Greenwich S.E—H.S and H P each at rate of £110

Ealing King Edward Memorial Hosp—Jun Res M O at rate of £150

East Ham Memorial Hosp Shrewsbury road E—Physician for Skin Dept

Elizabeth Garrett Anderson Hosp Euston road N W—Third H S at rate of £50

Exeter Royal Devon and Exeter Hosp—H S at rate of £150

Gloucestershire Royal Infirmary &c—H S to Ear Nose and Throat Dept at rate of £150

Halifax General Hosp—Jun Res M O £250

Halifax Royal Infirmary—Second H S at rate of £175

Hosp for Diseases of the Skin Blackfriars S E—Additional Member for Hon Staff

Huddersfield County Borough—Asst School M O £500

Hull Anlaby road Institution—Asst M O £350

Hull City Mental Hosp Willerby—Asst M O , £500

Hull Royal Infirmary—H S to Ophth and Ear, Nose and Throat Depts also second Cas O each at rate of £150

Ipswich, East Suffolk and Ipswich Hosp—H P £144

Leeds General Infirmary—Part time M O to X Ray Therapy Dept £100

Leeds Maternity Hosp and Hosp for Women—Joint Pathologist, £600

Leeds University Faculty of Medicine.—Med Tutor and Registrar £500

Leicester City Isolation Hosp and Sanatorium—Jun Asst. M O at rate of £300

Leicester Royal Infirmary—Res Anæsthetists at rate of £150 H S s Cas O s and H P s at rate of £125 Also Jun Cas O £100

Lincoln County Hosp—Sen and Jun H S £250 and £150 respectively

Liverpool and District Hosp for Diseases of the Heart—H P , £100

Liverpool Heart Hosp—Additional Hon Asst Physician Also First Asst

London County Council—Asst M O s for Mental Hosps Dept each £470 Also Part time Cons Ophthalmologists each £125 &c

London Hosp E—First Asst to Ophth Dept

Manchester Ancoats Hosp—Med Reg £50

Manchester Duchess of York Hosp for Babies—Sen and Jun Res M O s at rate of £125 and £75 respectively

Manchester Park Hosp , Davyhulme.—Res Med Supt , £850 &c

Manchester Royal Children's Hospital Pendlebury—Asst M O for Out Patients Dept at rate of £150

Miller General Hospital Greenwich road S E—H S and Cas O at rate of £100 and £150 respectively

Newcastle upon Tyne Eye Hosp—Sen H S , £300

North Riding of Yorkshire County Council &c—Borough M O H and Asst to County M O H £800

Norwich City—Res M O , Isolation Hosp Asst M O H and Asst School M O £450

Nottingham and Midland Eye Infirmary—Res H S £200

Plymouth, Prince of Wales's Hosp Greenbank road—H P and H.S each at rate of £120

Poplar Hosp for Accidents East India Dock road, E—Res M O at rate of £175

Preston and County of Lancaster Royal Infirmary—H S to Eye Ear Nose and Throat Dept at rate of £150

Preston Whiston Institution Infirmary near Prescot—Visiting Anæsthetist £275

Princess Beatrice Hosp Earl's Court, S W—Res Surg O at rate of £200 H P and Cas O at rate of £110 Also Cas O and Obstet H.S at rate of £110

Princess Elizabeth of York Hosp for Children Shadwell E—H.P at rate of £12 ,

Prince of Wales's General Hosp N—Jun H P and two Jun H.S s each at rate of £90

Queen's Hosp for Children Hackney road E—H P and Cas O each at rate of £100

Rotherham Hosp—Sen H.S or Physician £200 Also H P £180

Royal Eye Hosp St George's-circus S E—Sen H.S Also two Asst Surgeons at rate of £150 and £100 respectively

Royal London Ophthalmic Hosp City road, E C—Sen Res O at rate of £150

Royal National Orthopædic Hospital 234 Great Portland street W—Two H.S s each at rate of £150

Royal Naval Medical Service—Vacancies for M O s

Royal Northern Hosp Holloway N—Surg Reg £300 Also Consulting Physicist.

Ruislip Northwood Urban District—M O H £250,

St Albans County Institution Oster House—H.S at rate of £150

St John's Hosp for Diseases of the Skin Leicester square W C—Out patient and In patient Med Registrars each £50

St Mary's Hosp W—Surgical Registrar £200

Salford City—Asst Maternity and Child Welfare M O £500

Scarborough (New) Hosp—H P at rate of £130

Smethwick St Chad's Hosp—Res Obstet O £350

Stafford Staffordshire General Infirmary—H P and Cas O , at rate of £150

Stoke-on Trent Burslem Haywood and Tunstall War Memorial Hosp—Res H P at rate of £150

Tancred Studentships—Three Studentships each £100

Taunton and Somerset Hosp—H.S at rate of £100

Tunbridge Wells Kent and Sussex Hosp—H S £150

West Ham County Borough—First Asst Res M O for Central Home Leytonstone £525

West London Hosp Hammersmith W—Asst Pathologist £300 Also H P and two H S s each at rate of £100

Wickford Essex Runwell Hosp—H P at rate of £150

Medical Referee under the Workmen's Compensation Act 1925 for the Ashton under Lyne and Stalybridge County Court District (Circuit No 10) Applications should be addressed to the Private Secretary, Home Office Whitehall London S W 1 before March 8th

The *Chief Inspector of Factories* announces vacancies for Certifying Factory Surgeons at Ware (Hertford) and St Marys (Isles of Scilly) (Cornwall)

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday and cannot appear if it reaches us later than the first post on Wednesday morning

SOCIETIES

ROYAL SOCIETY OF MEDICINE 1 Wimpole-street W

MONDAY, Feb 22nd

Odontology 8 P.M. Mrs Lilian Lindsay Sir John Bland-Sutton and the Odontological Society Mr T W B Osborn and Mr J N Noriskin (Witwatersrand): The Relation between Diet and Caries in the South African Bantu Mr Guy Ellingham The Osmotic Pressure of Local Anæsthetic Solutions

TUESDAY

Medicine. 5 P.M. Dr W G Savage Milk as a Factor in the Cause of Disease Prof G S Wilson and Prof F C Minett will also speak

WEDNESDAY

Comparative Medicine 5 P.M. Mr J R M Innes Lesions in the Organs of Rabbits produced by Single and Repeated Injections of B C G Major T Dalling Notes on Distemper Immunisation Dr E T C Spooner An Epidemic of Ferret Distemper Presenting Certain Interesting Characters

THURSDAY

Urology 8 30 P.M. Mr Geoffrey Parker The Extra urinary Causes of Urinary Obstruction

FRIDAY

Disease in Children 5 P.M. (Cases at 4.30 P.M.) Mr Harold Edwards 1 Exomphalos Result 6½ Years after Operation Dr Wilfrid Sheldon and Mr Harold Edwards 2 Congenital Stricture of the Recto sigmoid Mr R R. Prewer (for Dr David Levi) 3. Achalasia of the Œsophagus in a Child aged 10 Dr Reginald Lightwood 4 Infantile Myxœdema Dr Seton Campbell and Dr A J Hardy (for Dr Donald Paterson) 5 Actinomycosis of the Lung Dr H J Wallace 6 Staphylococcal Pneumonia Dr T A Shaw 7 Spasmus Nutans: Monocular Nystagmus

Epidemiology and State Medicine. 8 15 P.M. Dr J M Alston and Dr W A Brown Infective Jaundice.

MEDICAL SOCIETY OF LONDON 11, Chandos-street W

MONDAY Feb 22nd —8 30 P.M. Dr C. E Lakin and Dr Geoffrey Harrison Ætiology and Diagnosis of Jaundice

WEDNESDAY —9 P.M. Sir Thomas Dunhill: Surgery of the Thyroid Gland (Second Lettsomian lecture)

MEDICO-LEGAL SOCIETY

THURSDAY Feb 25th —8.30 P.M. (Manson House, 26 Portland place W) Mr Paul C. Davie Silicosis an Administrative Experiment

SOCIETY OF MEDICAL OFFICERS OF HEALTH 1 Thornhaugh-street, W C

Fever and School Medical Groups.

FRIDAY, Feb 26th —5.30 P.M. Discussion on the Control of Whooping-cough

ST JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY 5 Lisle-street W C

WEDNESDAY, Feb 24th —4 30 P.M., Clinical Cases 5 P.M. Mr T Pomfret Kilner Reconstructive Surgery

HUNTERIAN SOCIETY

MONDAY Feb 22nd.—9 P.M. (Mansion House E.C.) Lord Horder The Hunterian Tradition (Hunterian oration.)

LECTURES ADDRESSES DEMONSTRATIONS &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S W

TUESDAY Feb 23rd.—5 P.M. Dr P M D Arcy Hart: Measures for the Prevention of Pulmonary Tuberculosis among Adults in England—in the Past and in the Future (Second Milroy lecture)

THURSDAY —5 P.M., Dr D E. Denny Brown The Nervous Control of Micturition and its Disorders (First Goulstonian lecture)

ROYAL COLLEGE OF SURGEONS Lincoln's Inn fields W C.

MONDAY Feb 22nd.—5 P.M. Dr David Slome The Nervous Factor in Traumatic Shock (Arris and Gale lecture)

ROYAL INSTITUTION 21 Albemarle-street W

FRIDAY, Feb 26th.—9 P.M., Lord Horder Old Diseases and New

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane-road W

TUESDAY Feb 23rd —4.30 P.M. Dr Gardiner-Hill Endocrine Diseases and Disturbances

WEDNESDAY —Noon clinical and pathological conference (medical) 2 P.M. Dr A A Miles Blood Culture 3 15 P.M., clinical and pathological conference (surgical)

THURSDAY —Noon, clinical and pathological conference (obstetrics and gynæcology) 2 30 P.M., Dr Duncan White: Radiological Demonstration 3 30 P.M. Mr A K Henry Demonstration on the Cadaver of Surgical Exposures 3 30 P.M. Mr Charles D Read Dysmenorrhœa

FRIDAY —2 P.M. operative obstetrics. 2 30 P.M. Prof Hey Groves Fractures 3 P.M. department of gynæcology pathological demonstration

Daily 10 A.M. to 4 P.M. medical clinics, surgical clinics or operations obstetrical and gynæcological clinics and operations.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE Hammersmith, W

MONDAY, Feb 22nd.—10 A.M. skin clinic 11 A.M. surgical wards 2 P.M., operations surgical and gynæcological wards medical surgical, and gynæcological clinics 4 15 P.M., Mr Neil Sinclair Appendicitis

TUESDAY —10 A.M. medical wards. 11 A.M., surgical wards. 2 P.M., operations medical surgical and throat clinics 4 15 P.M. Mr Alex. Roche: Hæmaturia and Renal Growths.

WEDNESDAY —10 A.M. children's ward and clinic 11 A.M., medical wards 2 P.M. gynæcological operations medical, surgical and eye clinics 4 15 P.M. Mr Steadman Pyorrhœa Alveolaris

THURSDAY —10 A.M. neurological and gynæcological clinics Noon fracture clinic. 2 P.M. operations medical surgical and genito-urinary and eye clinics

FRIDAY —10 A.M. medical wards skin clinic. Noon, lecture on treatment 2 P.M. operations medical surgical, and throat clinics 4 15 P.M. Dr Erlc Hudson Pneumonia

SATURDAY —10 A.M. children's and surgical clinic. 11 A.M. medical wards

The lectures at 4 15 P.M. are open to all medical practitioners without fee

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1 Wimpole-street W

MONDAY Feb 22nd, to SATURDAY, Feb 27th —ST JOHN'S HOSPITAL, Leicester-square, W C afternoon course in dermatology (open to non members)—NATIONAL TEMPERANCE HOSPITAL, Hampstead road N W Tues., 8 30 P.M. Mr Cecil Flemming Liver, Spleen, and Pancreas Thurs, 8 30 P.M., Mr Michael Smyth Large Intestine and Rectum —NATIONAL TEMPERANCE HOSPITAL, Hampstead road, N W Tues and Thurs 8 P.M. clinical and pathological course.—ROYAL WATERLOO HOSPITAL, Waterloo-road S E all-day course in medicine surgery, and gynæcology —BROMPTON HOSPITAL, S W , 5 P.M. twice weekly M R C P course —INFANTS HOSPITAL, Vincent-square S W, Mons. Weds. and Fris. 5 15 P.M. primary F R C S course.—Courses arranged by the fellowship are open only to members

HOSPITAL FOR SICK CHILDREN Great Ormond-street W C

THURSDAY Feb 25th —2 P.M. Dr R. S Frew: Useful Remedies in Diseases of the Chest 3 P.M. Dr W W Payne The Investigation of Hepatic Inefficiency

Out patient clinics daily at 10 A.M. and ward visits daily at 2 P.M.

NATIONAL HOSPITAL, Queen square, W C

MONDAY Feb 22nd.—3 30 P.M. Dr Kinnier Wilson Congenital and Heredo-familial Diseases (I)

TUESDAY —3 30 P.M. Dr Critchley Vascular Diseases of the Brain (I)

WEDNESDAY —3.30 P.M. Dr Kinnier Wilson Clinical Demonstration

THURSDAY —3 30 P.M., Dr Critchley Vascular Diseases of the Brain (II)

FRIDAY —3.30 P.M. Dr Purdon Martin Muscular Atrophy of Spinal Origin

Out patient clinic daily at 2 P.M.

HOSPITAL FOR EPILEPSY AND PARALYSIS Maida Vale, W

THURSDAY Feb 25th —3 P.M. Dr Anthony Feiling Clinical Demonstration

NATIONAL HOSPITAL FOR DISEASES OF THE HEART Westmoreland-street W

TUESDAY Feb 23rd.—5 30 P.M., Dr F W Price Heart Disease and Childbearing (I)

CENTRAL LONDON THROAT NOSE, AND EAR HOSPITAL Gray's Inn-road W C.

FRIDAY Feb 26th —4 P.M. Mr F W Watkyn Thomas Otosclerosis

HAMPSTEAD GENERAL AND NORTH WEST LONDON HOSPITAL N W

WEDNESDAY, Feb 24th —4 P.M. Mr H Lawson Whale Epistaxis

LONDON SCHOOL OF DERMATOLOGY 5 Lisle-street W.C.

TUESDAY, Feb 23rd —5 P.M., Dr S E Dore: Pruritus Prurigo and Lichenification

THURSDAY —5 P.M., Dr A Burrows Malignant Conditions of the Skin.

ST JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE 42 Ranelagh-road, S.W

FRIDAY, Feb 26th —4 30 P.M. Dr Francis Bach: Hydrological Method of Treatment in the Rheumatic Diseases

SOUTH WEST LONDON POST-GRADUATE ASSOCIATION

WEDNESDAY Feb 24th —4 P.M. (St James Hospital, Ouseley-road S W) Dr C F Lakin: Demonstration of Medical Cases

LEEDS GENERAL INFIRMARY

TUESDAY Feb 23rd.—3 30 P.M. Mr. Broomhead: Short Talk on Amputation Stumps followed by Demonstration of Patients and Cinematograph Film of Limbless Men and Demonstration of Artificial Limbs

ST MARY'S HOSPITALS Manchester

THURSDAY, Feb 25th —4 15 P.M. (Whitworth street West Hospital) Dr W R Addis: Albuminuria in Pregnancy

ANCOATS HOSPITAL, Manchester

THURSDAY Feb 25th —4 15 P.M., Dr F D Gray X Ray Investigation of the Urinary Tract

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION

WEDNESDAY, Feb 24th —4 15 P.M. (Western Infirmary) Mr A J Hutton Surgical Cases

NOTES, COMMENTS, AND ABSTRACTS

MOVEMENTS OF THE DIGESTIVE TRACT

Dr **RUSSELL J REYNOLDS** delivered a Hunterian lecture at the Royal College of Surgeons of England on Jan 20th entitled "Movements of the Œsophagus, Stomach, Duodenum, and Ileum during the Passage of an Opaque Meal."

He explained that he would illustrate his remarks by cinematograph films made with an apparatus designed by himself, by which it was possible to obtain clear moving records of the image on a radiographic screen This method had the advantage that it perpetuated the whole of a radiographic examination instead of only chosen instants, so that the observer could study the record in detail afterwards The value of these films was strikingly demonstrated by the fact that the observer noticed new points every time he examined them. It was only necessary to expose a film for long enough to include several cycles of movement of an organ Any number of positives could be printed, and these could have their ends joined to form a circular band, which could be projected continuously as often as necessary

THE ŒSOPHAGUS AND STOMACH

On the fluorescent screen the image of the œsophagus appeared to be narrowed in three places at the upper end, where it was constricted by the inferior constrictor muscle of the pharynx, where it was crossed by the left main bronchus, and where it passed through the diaphragm It was dilated just above the diaphragm. During the act of swallowing, a bolus of food was projected to the back of the mouth by means of an upward and backward movement of the tongue A reflex action, stimulated by contact with the sensitive nerves in this area, caused the suprahyoid and associated muscles to contract, drawing the hyoid upwards and backwards and rotating it about a lateral axis The food was then jerked into the pharynx, which was attached to the hyoid and therefore drawn up with it The jerk carried the bolus over the epiglottis, which, with the raising of the hyoid, had closed the opening of the larynx The liquid then passed rapidly down under the influence of gravity, clinging to the sides of the œsophagus, which seemed to be dilated to receive it No peristalsis was visible On reaching the level of the clavicle the food was held up, either at the crossing of the left bronchus or by a weak sphincter where the muscle changed from a voluntary to an involuntary type

The food might then follow various courses Solid food was passed slowly down by peristalsis and went straight through the cardia as the wave of peristaltic relaxation reached the sphincter Semi solid food travelled in much the same manner, but liquid might act in one of three ways It might pass down in a thin stream under the influence of gravity, be held up at the cardia and fill the œsophageal ampulla like a test tube until the pressure was sufficient to open the cardia, the column then all entered the stomach at once Alternatively, gushes of fluid might pass rapidly down and enter the stomach directly without any delay at the cardia, this appeared to be due to the intermittent yielding of the intrathoracic sphincter Thirdly, the liquid might pass into the stomach in a constant thin stream under the influence of gravity In this case it was presumably allowed to escape through the constriction at the thoracic inlet at a constant rate, as it would be more likely to do if the constriction were purely mechanical, such as that caused by the left bronchus

After the food entered the stomach through the narrow cardiac orifice, it first passed into the upper part of the stomach, which comprised most of the fundus This part was passive, no peristalsis was observed, and it merely dilated against the normal muscular tone as it filled. It was separated from the more active lower parts of the stomach by a weak sphincter, which relaxed when a certain pressure was reached and allowed the food to pass through along the greater curvature When the lower part of the stomach was dilated, peristalsis began and passed the food along to the pyloric part Peristalsis caused a rise in pressure in the middle part of the stomach and the food regurgitated into the fundus General contraction forced the head of the food column through the pylorus into the duodenum The passage of liquid food through a stomach of good tone was rapid about 20 seconds from cardia to jejunum. In one of the films some of the opaque meal could be seen entering the jejunum while the last of it was still in the œsophagus

In the hypotonic stomach the three stages were not so well shown, but the passivity of the first part and the generalised contraction of the third seemed to be invariable The direct passage of the food out of a tonic stomach might be connected not only with the more vigorous movement, but also with the greater acidity of the stomach compared with the duodenum. The change in the character of the movement as the food passed through the stomach might depend upon the difference in the arrangement of the muscular coats In the first part of the stomach there were many oblique fibres and few circular In the second part, where the circular fibres were more numerous, peristalsis started, and in the third, where the circular coat was very thick and some of the longitudinal fibres interlaced with it, a generalised contraction took place The passage of food through the duodenum did not synchronise with the time of its escape from the stomach This might be due to the fact that the circular fibres of the stomach were not continuous with those of the duodenum, and the only fibres common to the two were a few longitudinal fibres not concerned with peristalsis When a tonic stomach was distended with food, very little mixing with the gastric juice or digestion or absorption of any kind could take place The food was hurried so rapidly through the duodenum that little digestion could occur there either, unless ordinary food were retained longer than the barium emulsion

The tonic and the hypotonic stomach alike contracted vigorously when they were suddenly distended with a large quantity of food After a short while the fibres lengthened and the stomach adapted itself to the bulk. Activity slowed down, and finally even the third part did not force enough barium meal through the pylorus to cast a shadow, but food was still passing rapidly through the duodenum 20 minutes after it had entered a tonic stomach Digestive trouble might possibly be caused by hurried meals because the stomach was given no time to adapt itself but was compelled to pass the food through insufficiently mixed with gastric juice

When the abdominal wall was relaxed, the whole stomach descended, except the pylorus, which was kept in position by the peritoneal attachments of the duodenum The coils of the small intestine, which before were supporting the stomach, descended into the pelvis and the stomach descended with them This gastroptosis kinked the stomach and formed a deep pool in which food might collect so that digestion was delayed and prevented. Moreover pressure on the veins and arteries might interfere with the blood supply A properly fitting abdominal belt would remedy the disturbance

When the emulsion entered the small intestine it soon became diluted with secretion and spread out so that the outline of the individual cells disappeared and the picture became indefinite The food moved rapidly through mainly in discrete *blocks by means of peristalsis*

'AS BIG AS A PIECE OF WOOD

SOME of us young or long memoried enough may recall receiving the above teasing reply from the grown up pestered by our oft-repeated question How big is it ? A moment s reflection showed us that the answer was unsatisfactory and our shrill questioning would soon begin afresh. Readers of the January issue of the *Journal of Pathology and Bacteriology* received a pleasant surprise in the form of an inset essay On the Quantitative Study of Tumours which shows that the clinical investigator like the difficult adult is still disinclined to give plain answers to plain questions. Rather than use a millimetre rule he prefers a vital system for has he not around him countless convenient measures from his own head, which is sometimes swelled to the head of a pin ? In the course of one paper the writer found tumours compared in size to ' a walnut a lentil, a pea a large pea a golf ball, a small hen s egg and a pigeon s egg Many of these obviously fall within the same unsatisfactory category as the piece of wood ; and with the golf ball there is the added danger of describing it as large or small which would inevitably lead sooner or later to friction between the Pathological Society of Great Britain and the Royal and Ancient Club two bodies who if never friendly have up to now always lived in mutual forbearance For the oölogical method of measurement there is more to be said though even this method is not free from objection. The range of size in eggs from the ostrich s on the one hand to the humming bird s on the other is wide enough for all ordinary tastes and when in doubt there is always the cuckoo s egg which apparently varies with the size of the egg of the foster-parent Nevertheless there are large and small eggs in every species and it must be remembered that a small hen s egg is not necessarily small The writer amusingly suggests that a standard egg might be kept in a strong room in the Houses of Parliament We should prefer the National Institute of Medical Research

WATER POLLUTION

AMONG the useful activities of the Water Pollution Research Board not the least is the preparation and issue of its Summary of Current Literature The January number of this monthly publication which starts the tenth year of issue contains 114 abstracts of papers and reports on subjects connected with water supply purification pollution sewage treatment It is of interest to note that French English and German processes have been patented for obtaining water from air either by condensation or absorption by hygroscopic substances and distillation of the absorbed water Another interesting observation is that the effect of rehousing in Leeds has not been to increase materially the per-capita consumption of water—the reason being it is suggested improvement in fittings and coöperation by consumers in prevention of waste It is recorded that the beet-sugar manufacturers of Belgium are alive to the necessity for prevention of pollution of water courses by effluent from their works and Belgium has a Ligue nationale contre la pollution des eaux

A good feature of these abstracts is that following the example of *Science Abstracts* they are numbered—a great assistance to the compilation of bibliographies and notes for reference

THE MIND OF THE YOUNG CHILD

AT a meeting of the Medical Society of Individual Psychology on Feb 11th Dr EMANUEL MILLER contributed the second of a series of lectures which form a symposium on mental health in childhood His subject was the development of the child from suckling to the fifth year

Dr Miller said that even by the time suckling is ended and the teeth have begun to appear an understanding of child behaviour can only be fully understood by considering both biological and psychological processes With the emergence of the teeth the appetitive instincts of the child take on a special quality because the development of the muscles of the jaw develops in conjunction with other muscular coördinations For example, the child is beginning to grasp more skilfully and the satisfaction of hunger is in the nature of an attack on the desired object the food. At this stage we can still say that this act is primarily in the nature of desire rather than the operation of what is sometimes called primary aggression. Aggression can only be said to come when the child's instinctual needs are frustrated. At the same time different parts of the body are involved in acts of instinct ; gratification and pleasure feelings no doubt accompany these acts and make them additionally worth while. It is natural for a child to feel frustration because the manner in which its life is managed does not always keep pace with the natural rhythms in the ebb and flow of the child s appetites. The child now begins to feel a difference between itself as *me* and an obstinate external world which is merely felt as a *not me* This *not me* is the source of privation which the child dreads The facial expression and bodily movements of a child of this age indicate that dread and privation seem to go together The mother or nurse is the first environmental influence which is felt as a source of gratification and of privation In the *same way as a* child assimilates its food so it assimilates this first person into itself This is the first phase of the process of introjection of the parent s figure When the child has begun to walk, it meets other forms of frustration which usually originate in those who satisfy its needs and who govern its needs The child controls *or* restrains itself in regard to its instincts by taking into itself those very persons who have restrained it It assimilates them. Thus within the mind of the child there develop good and bad images of the parent figures. The mother internal image is more likely to be in a normal case a kindly image than a bad one but as it grows older this good or bad *or* both images is now set over against the real parents whom the child sees as a figure of its external objective world. Any angry feelings born of frustration are as likely to be directed against the image parent as the real one and the *child is* constantly testing external experience to see whether it conforms to its new internal estimates of the parents This can give rise to refractory behaviour and anxiety anxiety to control instinctual impulses at one time or playing up to reinstate a pleasant good relationship with *the* parent by being good or by being babyish

This being babyish may appear in behaviour as a sudden return to infantile modes of response Having introjected the restraining parent images the child may develop a fear of those bodily functions and organs which have been restrained or controlled ; thus a child may become constipated through fear of dirtying or refuse to eat or may express fears indirectly about micturition and the organ associated with it By the eighteenth month the growth of intelligence and language gives the child an instrument for controlling the external world and this becomes in a way an escape from instinctual pressure His verbal behaviour therefore enables it to disguise its instinctual needs by verbal manipulations, frequently projecting upon the external world a verbal expression of its anxieties The next year or so is concerned with attempts to understand not only the external world in general but the parents in particular The double feelings it has about parents are intermittently solved by giving all love to one and showing hostility to the other This mood oscillates and may be disquieting to parents, but if the parents can meet the situation with equanimity the child gradually gets assured that its hostility is an internal thing and not " just to " external facts In fact, the child is trying to project its inner hostility of the outer world for purposes of release, and it should be given every opportunity through play to obtain this release and by contact with persons other than parents to diffuse love and hostility over a wider field

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* Department of Scientific and Industrial Research Water Pollution Research Summary of Current Literature vol 10 January, 1937 Abstracts Nos 1-114 HM Stationery Office 2s.

WOMEN DISTRESSED IN MIND

THE council of the Society of the Crown of our Lord, commemorating and carrying on the work of its foundress, Miss Bertha James, who died last year, wishes to provide for educated women whose mental health is temporarily impaired the advantages of skilled medical treatment together with nursing and spiritual help To this end an appeal has been issued to which Lord Dawson of Penn and Sir Francis Fremantle among others have put their names A sum of £3000 is being sought for the purchase and equipment of a house which would in effect become an inexpensive nursing-home with a religious atmosphere The Society proposes to allot the largest rooms at four to five guineas a week, the remainder at much less It is certain that there are many patients who would benefit greatly from a stay in such a home especially if care be taken, as no doubt it will, to select them judiciously on psychiatric as well as other grounds We gladly endorse the appeal

Appointments

BETTLEY F R M D M R C P Lond has been appointed Hon Dermatologist and Medical Officer in Charge of the Male Venereal Diseases Centre at Cardiff Royal Infirmary

BURN J L M.D Durh D P M Medical Officer of Health for Barnsley

ELLIS, GWYNETH N , M B Lond , Assistant Medical Officer for Rhondda

HAMILTON, W M B F R C.S Clinical Assistant to the Ear Nose and Throat Department at the Guest Hospital Dudley

HERRING JEAN, M B St And Assistant Visiting Obstetrician and Gynæcologist to the Dundee Royal Infirmary

•**HUNTER,** J W A M D Edin M C O G , Senior Obstetrician and Gynæcologist to the Withington Hospital Manchester

KING JANET C , M B Edin D.P H Assistant Medical Officer for Kent

LONG MURIEL H E M B Lond , F R C S Eng Surgical Registrar for the South London Hospital for Women

•**NEWTON ROBERT** M D Manch M C O G Obstetrician and Gynæcologist to the Withington Hospital Manchester

SEEX I M M B F R C S Edin Hon Visiting Surgeon to the Department for the Treatment of Diseases of the Ear Nose and Throat Royal Northern Infirmary Inverness

STONEHAM G R M B N Z M C O G Resident Obstetrical Officer at Park Hospital Davyhulme

• Subject to confirmation

Christie Hospital and Holt Radium Institute Manchester —The following appointments are announced —

ROWBOTHAM G F B Sc F R C.S Eng Hon Neurological Surgeon

WATKINS K H M B Manch M S Lond F R C S Eng , Hon Urological Surgeon and

BENTLEY F H M B Manch F R C.S Eng Hon Plastic Surgeon

London County Council Hospital Staff —The following appointments promotions, and transfers are announced A.M O (I) and (II)=Assistant Medical Officer Grades I or II Temp D.M O =Temporary District Medical Officer

WHYTE, ELIZABETH C. M B A.M O (II) Grove

FRIEDLAND COLIN M B House Physician Lewisham

DRAKE C H M R C S Eng House Physician St Alfege s

BLEADEN F A , M R C S Eng House Physician St Andrew s

BRANDER W G , B Chir House Physician St James

MITCHELL SMITH J I M R C S Eng , House Surgeon, St Giles

MAY QUEENIE I E M B , Clinical Assistant, St Charles ,

LINDSAY D M M D , M C O G Part time A M O Maternity Department St Leonard s

TROUTON NORAH E M D D T M Temp D.M O , North Battersea

GURRIE N S M D , Temp D.M O Brixton and Denmark Hill ,

AGASSIZ C D S M D , M R.C P , D P H , Senior M O Central Office Staff

FERRABY G S M B , F R.C.S B S Senior A M O (I), Dulwich

HOLMES S W M B , F R C.S Senior A M O (II) St. Stephen s

DORLING G C F R C S Senior A.M O (II) St Mary Abbots ,

MASON J H G M D M R C P , Senior A.M O (II) St Andrew s

JONES A N M B F R.C S , Senior A.M O (II) St Andrew s ,

HODSON H B , M D , M R C.P Senior A M O (II), High Wood

WHEATON, C E W M D M R C P Senior A.M O (II) St Alfege s

SEYMOUR, S G M D Senior A M O (II), St Alfege s ,

WHYTE ELIZABETH C , M B A M O (II), North Western

PHILLIPS, JOHN, M B , A M O (II), St Charles

FOX, R W S M B , A M O (II) St Mary Islington

Westminster Hospital —The following appointments are announced —

MULLALLY G T M S Lond F R C.S Eng Surgeon

CADE STANFORD, F R.C S Eng Surgeon

LEE E S , M S Lond , F R C S Eng Assistant Surgeon and

MACNAB G H M B Edin F R.C S Eng , Assistant Surgeon.

Certifying Surgeon under the Factory and Workshop Acts Dr D V **SUMMERS** (Kettering District, Northants)

Births, Marriages, and Deaths

BIRTHS

CHRISTIE —On Feb 9th, the wife of Dr W J Christie, Morden road S W *of a son*

CHURCHER.—On Feb 12th at Eastbourne the wife of D G Churcher M D F R.C S , of a son

DARLEY —On Feb 12th at Claygate Surrey, the wife of Dr Rupert D Darley, of a daughter

GOW —On Feb 11th, at Upper Harley street N W , the wife of Dr A E Gow, of a girl and a boy

GRAHAM —On Feb 9th at Welbeck-street, the wife of Dr J M Graham, of Seaford, of a son

LYTHGOE —On Feb 13th at Woburn square, London W C , the wife of Dr R J Lythgoe of a daughter

MARRIAGES

GARDE—WHELAN —On Jan 25th in London Godfrey W Garde M.B Dubl to Margaret B Whelan

GREEN—ROBERTS —On Feb 9th at Wells, Somerset Philip Green, M B Manch of Portsmouth to Violet Agnes Roberts widow of Dr Hamilton Roberts

PRIEST—BURGESS —On Feb 6th at Hendon Wilfrid Michael Priest M D , M R.C P Lond , to Marianne Burgess

ROLT—NIMMO —On Feb 6th, in London John B Rolt, M D Edin , of Chalfont St. Giles to Willa Mac Nimmo

DEATHS

DOWNES —On Feb 9th at Ilminster Somerset, Harold Downes M B Edin aged *70*

GOVER.—On Feb 11th at Nevern square S W Col John Maxwell Gover D S O M D Durh aged 60

JUST —On Feb 13th in London Theodore Hartman Just M B Camb , F R C.S Eng

LAWRIE —On Feb 13th at St Leonards on Sea David Lawrie M B Glasg , D.P H *aged 76*

POOLMAN —On Feb 10th, at Ridgmount-gardens, W C Arthur Edward Poolman M R C S Eng

ROBERTSON —On Feb 9th Frederick William Robertson, O B E M D Lond of Bletchingley Surrey aged 70

SIEGER.—At 11 Sandringham terrace Greenock on Feb 4th Albert S , L R C P Edin D P H Glas Asst Port Medical Officer Glasgow Beloved husband of M T Meechan R I P

TAYLOR.—On Feb 12th at Weybridge, William Bramley Taylor M R C.S Eng J P , aged 90

N.B —A fee of 7s 6d is charged for the insertion of Notices of Births Marriages and Deaths

INDEX TO "THE LANCET," VOL II, 1936

THE Index and Title page to Vol. II, 1936, which was completed with the issue of Dec 26th, is now ready A copy will be sent gratis to subscribers on receipt of a post card addressed to the Manager of THE LANCET, 7, Adam street, Adelphi, W C 2 Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now

ADDRESSES AND ORIGINAL ARTICLES

TUBERCULOSIS IN RELATION TO LIFE ASSURANCE *

BY OTTO MAY, M.D Camb F.R.C.P Lond
PRINCIPAL MEDICAL OFFICER TO THE PRUDENTIAL ASSURANCE COMPANY LONDON

IN essence life assurance is a system of pooling resources by a group of individuals in order to pay out a sum at death or after a certain period The annual premiums are calculated on certain mortality tables which show how many of the group may be expected to die each year

Most of the tables at present in use are select ones based on groups of people specially selected by careful inspection of a completed proposal form usually supplemented by a medical examination The latest table of this type, compiled by the Institute of Actuaries, and known as A 1924–29 Ult is based on the mortality between those years of persons accepted by various British companies as first class risks It shows, for each age, the mortality rate for each of the first three years after entry and subsequently for attained ages regardless of the age at entry The Chart shows what this latter rate is for lives aged from 30 onwards (dotted line) In the first year it is about 0 0025 and it rises only very gradually till after 23 years it reaches 0 01 (1 in 100) The continuous black line shows the mortality (males) from the English census returns of 1921 and is slightly higher though roughly parallel to the former

Types of Impairment

Suppose now that we have to consider how to deal with a group of proposers in whom there is some definite impairment some condition likely to upset the mortality curve Such conditions are of various types, which may be classified as follows —

(1) Occupational risks, of which the most important in life assurance is the retail trade in alcoholic liquors.
(2) Climatic risks
(3) Family history
(4) History of past illnesses
(5) Impairment in personal condition

Of course the same proposer may have impairments in more than one of these classes—e g. a publican with a tuberculous family history and a bad health record of his own

From the actuarial point of view the ideal way of assessing the extra risk in a particular case would be to construct from an experience of a large number of similar cases the mortality curve and to calculate from this how best to meet the extra risk thus shown Unfortunately for a large proportion of impairments the necessary data are too scanty to allow of this method and in such cases the method of dealing with the impairment must be largely empirical. There are various plans in use for accepting impaired lives at special terms the chief being—

(1) An addition of years to the age at entry so that the proposer pays an extra premium equal to the difference between that at his actual age and at the rated up age

(2) Similarly a certain extra sum may be added to the premium either for a limited period or for the duration of the policy not necessarily corresponding to any special age

(3) A reducing debt or lien is imposed usually a percentage of the sum assured which lien is reduced each year until it is wiped out For example in the case of a policy of £1000 the lien might be £500 reducible each year by say £25 until after 20 years the lien is extinguished

As to which is the most suitable from the actuarial point of view a great deal depends upon the nature of the extra risk. Some are definitely *increasing* risks such as the presence of some cardiovascular defect or excessive weight or a bad family history of cardiovascular disorders ; some are more or less *constant* such as climatic or occupational risks while others are definitely *decreasing* such as a personal history of pulmonary tuberculosis underweight &c An increasing or constant risk is best covered by an addition to the premium or rating up of the age while a decreasing risk is suitably met by a reducing lien which gradually disappears as the risk diminishes

From the proposer's point of view this method makes no appeal when the object of the insurance is primarily protection—i e when cover is definitely required in case of early death When on the other hand, the investment factor is of importance, such as provision for old age he would regard the lien as the preferable way as he pays no extra and should he survive a certain period, he receives the full face value of the policy

Impairment from Tuberculosis

Having given this preliminary sketch of life assurance in general I should now like to indicate how the tuberculosis problem is regarded in present-day life assurance practice I shall not discuss any of the questions of diagnosis, prognosis or treatment but merely indicate how the business of life assurance regards the various aspects of this problem Our methods may seem grossly empirical and unscientific, but it must be borne in mind (1) that the premiums charged allow only a small margin for medical expenses and (2) that competition between companies is pretty keen, and tends to prevent a too scrupulous investigation of apparently unimportant points For these reasons cases must be assessed on information which is often scrappy as regards both family history and past history and which is not seldom unreliable even on the question of the personal examination of the proposer Unless the proposal is for a large amount, it is usually impracticable to have the examination conducted by a specialist and the questions of expense and competition often prohibit a radiogram of the lungs or even a sputum examination in cases in which these methods might be regarded as indispensable in clinical practice In cases in which a past history of pulmonary tuberculosis figures on the proposal a report from the proposer's own doctor often draws a blank as the proposer may have received institutional treatment, and the practitioner seems unable or unwilling to give any useful information to the company Of course it is open to the latter to insist on the proposer giving the name of the institution with permission to apply to the medical superintendent for a report, but unless the proposal is for a substantial amount the cost of the examination and of the doctor's report already incurred together with the further delay involved may cause the company to assess the case on the information already in their possession instead of pursuing the matter any further

FAMILY HISTORY

Two large actuarial investigations on the influence of family history on pulmonary tuberculosis are worth mentioning, the first by Rusher and Kenchington (1913) and the second by the American Medico-Actuarial Investigation Committee (1914) Without going into details, both these confirmed the fact of the adverse influence on mortality of a family history of one or more cases of pulmonary tuberculosis, especially on *young, underweight* proposers If the young proposers are, in addition, *tall* (5 ft 11 in and upwards), the excess mortality is greater than for shorter underweights Incidentally the American investigation brought out clearly in this group an interesting point—namely, the decreasing proportion of deaths from tuberculosis with increasing weight, and increasing age This is shown in Table I

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* An address to the Tuberculosis Association delivered on Feb 20th

TABLE I

Effect of Weight and of Age

Weight	Age at entry 15–29			Age at entry 30–44		
Deviation from standard in pounds	Total deaths	Deaths from phthisis	Ratio (%)	Total deaths	Deaths from phthisis	Ratio (%)
−45 to −25	59	31	53	302	93	31
−20 to − 5	658	294	45	911	198	22
0 to +20	475	134	28	670	65	10
+25 to +45	71	5	7	216	4	2

In America, where the "numerical rating system" is almost universal, the extra mortality for family history is assessed on the lines shown in Table II, the amount depending on age at entry and the degree of deviation from the average weight for age In this connexion a further point may be mentioned To the tuberculosis expert, the interest of family history is principally on the question "How far, if at all, is the disease an hereditary one?" To the insurance company, the point of interest is "Does a tuberculous family history tend to impair the expectation of life—i.e., to increase the mortality risk?" They are not specially interested in the causes of the extra deaths, be they tuberculosis, diabetes, or anything else, but only in the fact of extra deaths in the group in question

CONTACTS

Here we arrive on debatable ground. The problems of marital infection and the analogous risks in family circles have been hotly debated At present there appears to be a predominating opinion that close contact in insanitary surroundings is a definite risk. A recent paper by Lloyd and MacPherson (1936) confirms this in the case histories of young adults with pulmonary tuberculosis, although, in the great majority of cases investigated by them, the contact was with tuberculous members of their families, so that the question of contact is complicated by that of heredity or familial susceptibility This point was emphasised as long ago as 1908 by Pope He found that the probability of infection between husband and wife was considerably less than between parents and child, or brother and sister, a result suggesting that hereditary "lack of resistance" plays a large part in many of the cases of apparent direct infection Whatever may be the theoretical truth regarding contact and hereditary predisposition, most insurance companies impose some extra if the proposer has been living in the same house as a patient with open tuberculosis, the amount of the extra depending on the hygienic conditions of the case and the various other obvious factors, such as proposer's physique and family history With my company it is customary to impose a fairly heavy reducing lien if there has been contact within 12 months of proposal, with an offer to reconsider the terms in a year on medical examination In America, "contact" is usually regarded for insurance purposes as equivalent to a family history of tuberculosis

PERSONAL HISTORY

When, if ever, is it practicable to undertake the insurance of proposers with a personal history of pulmonary tuberculosis? I need hardly point out that the mortality in the early years *after treatment* is high, even in the case of those who came under treatment at a comparatively early stage of the disease Among those applying for life assurance, with a history of pulmonary tuberculosis, the larger proportion are naturally in this group, though such is the optimism of the sufferer, or perhaps of the agent, that we not very rarely receive proposals from tuberculous patients in an advanced stage of the disease

Two English medico actuarial investigations of the after histories of patients who have been under sanatorium treatment are very instructive for the insurance offices, and I should like to refer to them in this connexion, they are those from Midhurst and Frimley The excellent annual reports from Midhurst (1935) contain a statistical record of all the cases discharged from the sanatorium since 1906, arranged in various groups according to the condition on admission, and presence or absence of tubercle bacilli in the sputum during their stay The total number discharged is 6451, and only 224 (or 3 4 per cent) cannot be traced

TABLE II

Rating for Build with or without Family History of Tuberculosis

Ages	No of cases of T B	Pounds under or over weight						
		−41 to −56	−25 to −40	−9 to −24	−8 to +8	+9 to +24	+25 to +40	+41 to +60
		plus	plus	plus	plus	plus	plus	plus
15–17	0	50	30	10	0	0	0	10
	1	120	90	60	40	40	30	30
	2	R	R	110	75	60	40	40
	3	R	R	R	R	120	90	75
18–22	0	40	20	0	0	0	0	20
	1	100	60	40	30	25	20	30
	2	R	120	75	60	40	30	30
	3	R	R	R	110	90	60	60
23–27	0	30	15	0	0	0	10	20
	1	70	50	20	20	20	20	30
	2	120	90	60	40	30	25	30
	3	R	R	100	80	60	50	50
28–32	0	20	10	0	0	0	20	20
	1	50	30	20	10	10	20	30
	2	100	60	40	30	20	20	30
	3	R	100	70	60	40	35	60
33–37	0	15	0	0	0	0	20	Rate for build alone
	1	30	15	10	0	0	20	
	2	70	40	30	20	10	25	
	3	110	70	50	40	25	40	
38–42	0	5	0	0	0	0	25	
	1	15	10	0	0	0	25	
	2	50	30	20	20	10	25	
	3	75	50	30	30	20	30	
43–47	1	10	0	0	0	0	25	
	2	30	20	20	0	0	25	
	3	50	30	20	20	10	30	
48	1	0	0	0	0	0	25	
	2	0	0	0	0	0	25	
	3	20	0	0	0	0	25	

Plus 50 means a mortality of 150 instead of the expected 100
R = rejected

The Chart shows the mortality experience (1) of *all* discharged cases (Curve E) and (2) mild cases only (Curve D) or Group 1 (Turban Gerhardt) T B positive —cases in which bacilli have been found—which have

> disease of slight severity limited to small areas of one lobe on either side which in the case of affection of both apices, does not extend beyond the spine of the scapula or the clavicle in the case of affection of the apex of one lung, does not extend below the second rib in front

The actual figures produce an irregular line due of course to the relatively scanty data. I have had this graduated into a smooth curve which to the actuary is an approximation to what might be expected if the data were large enough A comparison of these with the curves A and B of first-class risks (A 1924–29 and E.L.T 9) in males from age 30 shows the enormous excess mortality in the early years In the first year after discharge Curve E shows a mortality approximately 50 times the expected, and even after 5 years it is still about 25 times that expected from A (A 1924–29) after 10 years it is roughly 12 times after 20 years about 4 times and only after some 25 years do the two curves show signs of approximation Curve D the mild cases shows, as would be expected, a rather less unfavourable mortality In the first year it is roughly 17 times the expected after 5 years about 12 times after 10 years about 8 times and after 20 years about 3 times.

The Frimley experience deals with the patients admitted between 1905 and 1931 and comprises 8766 patients (Hartley Wingfield and Burrows 1935). For comparison with the Midhurst experience, I have taken the group of Grade B1 males

> All being T.B positive cases with slight constitutional disturbances, if any The obvious physical signs should be of very limited extent as follows Either present in one lobe only and in the case of an apical lesion of one upper lobe not extending below the second rib in front and not exceeding an equivalent area in any one lobe; or where these physical signs are present in more than one lobe they should be limited to the apices of the upper lobe and should not extend below the clavicle and the spine of the scapula No complication (tuberculous or other) of prognostic gravity should be present A small area of dry pleurisy should not exclude a case from this group

It will be seen that this group is very similar to Group 1 in the Midhurst classification and the mortality table here worked out in Curve C shows a general resemblance to that already shown for Midhurst (Curve D)

We may assume therefore that we have a pretty clear view of the mortality of a considerable group of cases having these features (1) all T B positive (2) all having undergone sanatorium treatment (3) physical signs as defined above—i e limited to infiltration or catarrh of one lobe or small parts of two—(4) without grave complications These constitute what one is prone to regard as a favourable type of case and yet the mortality compared even with the general population shows an enormous though decreasing excess for at least 20–25 years after discharge

Effect on Insurance

Suppose there were a scheme of compulsory insurance for this group it is I think obvious that the premiums to cover the risks would have to be so enormous as to make them fantastic It is the early incidence of the risk that makes this inevitable—reverse the extra mortality into an increasing risk, and the problem would be less insoluble

If however instead of extra premium the method of a decreasing lien is considered it will be seen that the situation is more promising Even two years after discharge, cases of this type might be accepted with a very heavy reducing lien say 80–90 per cent especially if proposing for an endowment assurance

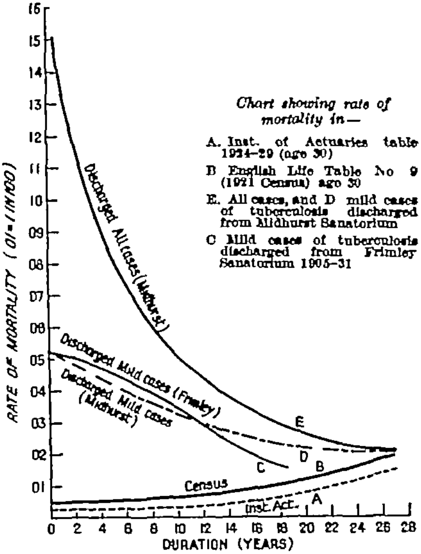

Chart showing rate of mortality in—

A. Inst. of Actuaries table 1924–29 (age 30)

B English Life Table No 9 (1921 Census) age 30

E. All cases, and D mild cases of tuberculosis discharged from Midhurst Sanatorium

C Mild cases of tuberculosis discharged from Frimley Sanatorium 1905–31

Naturally the death cover is very small at first and such a policy has little value as protection for dependants but sufferers from pulmonary tuberculosis can hardly expect it If they care for a policy that is primarily an investment this can be achieved by the offer of an endowment with a heavy lien My company has issued many such policies usually with an offer to reconsider the amount of the lien after the lapse of a few years and I cannot help thinking that these play a useful part from the psychological point of view It surely must help a tuberculous patient to a greater confidence in his future if he finds that a company is willing to offer him an insurance contract even though the death benefit is small.

Recently my company has investigated their experience of a group of entrants 1921–23 (three years) who all had a personal history of tuberculosis (nearly half being pulmonary) and who had been accepted under the conditions outlined above They numbered 804 of whom 353 were pulmonary cases Of the 804 79 died in the first 12 years of insurance against an expected 42; of the 353 pulmonary 47 died against an expected 17 This shows that the selection of cases was reasonably good. The actual claims paid in the group amounted to £11 506; the 'expected according to A 1924–29 would have been £11 017—a result indicating that this method strikes a fair balance between the proposers and the company

Special Cases

You will have noticed of course that I have discussed the insurance of these cases in bulk and said nothing about methods of individual selection. As I have indicated above, unless the proposals are for fairly large sums, it may be impracticable to investigate them as thoroughly as one would like to do, though personally I should never accept any proposal with a T B plus history, during the first five years without a heavy rating, however free from symptoms or physical signs he may appear to be

ARTIFICIAL PNEUMOTHORAX

I should be glad to hear medical opinion on how far treatment by artificial pneumothorax is to be regarded as a favourable prognostic feature Judging by the Frimley report, this method is used hardly at all in mild (Group B1) cases It was performed chiefly (in over 80 per cent) in Group B3 " Cases with profound systemic disturbance or constitutional deterioration, with marked impairment of function, either local or general, and with little or no prospect of recovery " These cases, when compared with other groups of the same sex, age group, and medical grade on admission, showed a more favourable mortality, suggesting that in these comparatively advanced cases it improved the period of survival We receive proposals from quite a considerable number of patients either with a history of artificial pneumothorax treatment, or even still having periodical refills, but I can give no figures of comparison with other cases We seldom find it practicable to consider these on more favourable terms, as the evidence of a definitely better prognosis is still rather scanty As regards other methods of treatment, such as phrenicotomy, thoracoplasty, and oleothorax, the number of próposals is small, and of course the cases are usually those in which the disease has been severe, so that it could hardly be expected that the terms of acceptance would be more favourable

NON PULMONARY TUBERCULOSIS

I have discussed the acceptance of pulmonary cases in some detail, and what has been said in that connexion applies, more or less closely, to urogenital tuberculosis No case would be accepted within five years of the disease, except with a maximum lien, and from five to ten years the lien should be a substantial one

In tuberculous joint or bone disease and adenitis we do not, as a rule, take such a grave view as in genito urinary and pulmonary disease, each case is treated on its merits, with regard to family history, age, physique, occupation and, of course, the extent of the original infection, and the time elapsing since then

PLEURISY

A history of primary pleurisy, whether dry or with effusion, is for assurance purposes always regarded as probably of tuberculous origin It is my usual practice to impose some lien in every case with this history till at least seven years have elapsed the amount of the lien varies according to the time, family history, physique, and so on It may be as little as 20 per cent. (our minimum) In our investigation of 2040 cases accepted in 1921–23, the actual deaths numbered 209, against the " expected " (A 1924–29) of 159 as regards the amount of claims, the " net " actual was £37,400 against the ' expected " of £46,475, a fairly substantial surplus, which is largely distributed as bonus to the survivors

In the " Medical impairment mortality ratings," which are used in America for their numerical method of assessment, no case is considered until at least a year after the attack The " extra " imposed after that period varies according to whether the attack was dry or with effusion, and according to the duration of the attack (dry), whether less than or more than two weeks, and according to the period that has elapsed, the age of the proposal, and the weight/height ratio

TABLE III

Dry Pleurisy (Attacks of less than 2 weeks)

Deviation from average weight—

2nd and 3rd years

Age—	−20 %	−15 %	−10 %	−5 %	0	+5 %	+10 %
20	+70	+50	+40	+30	+20	+15	+15
25	+60	+45	+35	+25	+15	+10	+10
30	+50	+40	+30	+20	+15	+10	+10
35	+45	+35	+25	+15	+10	+ 5	+ 5
40	+40	+30	+20	+15	+10	+ 5	+ 5
45	+35	+25	+15	+10	+ 5	+ 0	+ 0
50	+30	+20	+10	+10	+ 5	+ 0	+ 0
55	+25	+15	+ 5	+ 5	+ 0	+ 0	+ 0

4th and 5th years

Age—	−20 %	−15 %	−10 %	−5 %	0	+5 %	+10 %
20	+60	+35	+30	+25	+20	+15	+10
25	+40	+30	+25	+20	+15	+10	+10
30	+30	+25	+20	+15	+10	+10	+ 5
35	+25	+20	+15	+10	+10	+ 5	+ 5
40	+20	+15	+10	+10	+ 5	+ 5	+ 0
45	+15	+10	+10	+ 5	+ 5	+ 0	+ 0
50	+10	+10	+ 5	+ 5	+ 0	+ 0	+ 0
55	+10	+ 5	+ 5	+ 0	+ 0	+ 0	+ 0

6th to 10th years inclusive

Age—	−20 %	−15 %	−10 %	−5 %	0	+5 %	+10 %
20	+25	+25	+20	+20	+15	+15	+10
25	+20	+20	+15	+15	+10	+10	+ 5
30	+20	+15	+15	+10	+10	+ 5	+ 5
35	+15	+15	+10	+10	+ 5	+ 5	+ 0
40	+15	+10	+10	+ 5	+ 5	+ 0	+ 0
45	+10	+10	+ 5	+ 5	+ 0	+ 0	+ 0
50	+10	+ 5	+ 5	+ 0	+ 0	+ 0	+ 0
55	+ 5	+ 5	+ 0	+ 0	+ 0	+ 0	+ 0

It should be noted that the ratings here given are independent of and in addition to those which normally apply on account of the build of the applicant

Table III is an example of their method for assessment of an attack of dry pleurisy lasting less than two weeks It will be seen that the extra mortality rating varies from + 70 for young underweights in the second or third year after attack, to 0 in elderly people of normal weight or over For a longer attack (over two weeks) the corresponding maximum is + 140

Conclusion

In conclusion I should like to emphasise once more that the life assurance attitude towards tuberculosis is inevitably one of grouping cases into classes for which some sort of mortality table has been calculated, or can be presumed, rather than of considering them as clinical individuals

It is probable, nay certain, that some cases are dealt with too harshly, and others too leniently, but I see no way of avoiding this state of affairs If any one can point out any simple means of more exact prognosis in individual cases, I for one will welcome the information, and use it so far as is practicable for a more equitable assessment of the terms of acceptance in these cases

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THE TREATMENT OF IMPERFECT DESCENT OF THE TESTIS WITH GONADOTROPIC HORMONES

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FOR several years gonadotropic hormones have been used in the treatment of imperfect descent of the testis At present this method of treatment is still in the experimental stage, and it is probable that more prominence is given to the successes than to the failures of treatment. Few contra indications appear to be recognised and the method is too recent to permit any investigation into the possibilities of late complications

Schapiro (1930) reported a series of successful cases and various publications chiefly by American authors have appeared since On the whole the articles on this subject suggest that the treatment is successful in a high proportion of cases and that it is at any rate, harmless and should be tried On the other hand Cabot (1936) a recognised authority on the treatment of imperfect descent of the testis lecturing at St Thomas's Hospital in September 1936 considered treatment with gonadotropic hormones as unsatisfactory and possibly harmful The experience of this method in the surgical unit at the hospital over the last two years tends to support this view

THE MATERIAL

This paper gives an account of the results obtained by this method in 20 cases of imperfect descent of the testis which I have treated between May 1935 and December 1936 These patients, with the exception of 3 under the age of five represent the whole number which were kindly referred to me by the staff of St Thomas's Hospital and no selection of cases has been practised since in May 1935 there were no well recognised indications or contra-indications to the use of gonadotropic hormones

There had been no previous treatment in 14 cases but the remaining 6 had been the subject of unsuccessful operations The preparation used was Pregnyl (Organon Laboratories) and it was administered intramuscularly into the buttock in doses of 500 rat units Injections were usually given twice weekly but in some cases only one a week was given.

RESULTS

The following case summaries show the original condition and the results of treatment in the 14 patients who had had no previous treatment and in those who had had unsuccessful orchidopexy operations

PATIENTS WITH NO PREVIOUS TREATMENT

CASE 1—Aged 10 Bilateral imperfect descent of testes Orchidopexy performed on right at the age of 8 Small left testis in inguinal canal; right testis high in scrotum; small genitalia

Result—(18 injections) Both testes now in scrotum; development of genitalia better

CASE 2.—Aged 9 Bilateral imperfect descent of testes both in inguinal canal; small genitalia

Result—(12 injections) Both testes now in scrotum development of genitalia better

CASE 3—Aged 13 Bilateral imperfect descent of testes; both in inguinal canal; small genitalia

Result—(10 injections.) Both testes now in scrotum; development of genitalia better

CASE 4—Aged 6 Imperfect descent of right testis which was at external ring left descended late and sometimes retracts; small genitalia

Result—(10 injections) Both testes now in scrotum development of genitalia better

CASE 5—Aged 12 Bilateral imperfect descent of testes both in inguinal canal small genitalia

Result—(40 injections) Hypertrophy of genitalia no descent

CASE 6—Aged 14 Bilateral imperfect descent of testes both of good size outside external ring genitalia well developed

Result.—(21 injections.) Hypertrophy of genitalia no descent

CASE 7—Aged 15 Bilateral imperfect descent of testes A satisfactory orchidopexy performed on the left side at the age of 12 Right testis at the external ring genitalia well developed.

Result—(14 injections) Hypertrophy of genitalia no descent

CASE 8—Aged 12 Bilateral imperfect descent of testes Very small genitalia; testes not palpable Fröhlich type

Result—(25 injections) Testes not palpable; penis and scrotum larger growth of pubic hair

CASE 9—Aged 10 Imperfect descent of right testis, in inguinal canal genitalia well developed

Result—(16 injections) Hypertrophy of genitalia; no descent

CASE 10—Aged 12. Imperfect descent of right testis in inguinal canal genitalia well developed

Result—(21 injections.) Hypertrophy of genitalia; no descent

CASE 11—Aged 6 Imperfect descent of left testis, at external ring; genitalia well developed

Result—(18 injections) Gross hypertrophy of genitalia no descent

CASE 12—Aged 12. Imperfect descent of left testis outside external ring; genitalia well developed

Result—(20 injections) Hypertrophy of genitalia; no descent

CASE 13—Aged 14 Imperfect descent of right testis at external ring genitalia well developed.

Result—(15 injections.) Hypertrophy of genitalia; no descent

CASE 14—Aged 5 Imperfect descent of left testis, in inguinal canal; genitalia well developed

Result—(8 injections) Hypertrophy of genitalia no descent

AFTER UNSUCCESSFUL ORCHIDOPEXY

CASE 15—Bilateral imperfect descent bilateral unsuccessful orchidopexy at 9 years

Injection treatment at 11 years; testes over pubes genitalia very small.

Result—(10 injections) Development of genitalia; descent of testes.

CASE 16—Bilateral imperfect descent bilateral unsuccessful orchidopexy at 8 years

Injection treatment at 11 years; right testis over pubis; left at external ring; genitalia very small.

Result—(30 injections) Development of genitalia descent of testes to scrotum

CASE 17—Bilateral imperfect descent bilateral unsuccessful orchidopexy at 5 years

Injection treatment at 11 years; both testes at the external ring and size of a pea genitalia very small

Result—(30 injections) No change

CASE 18—Imperfect descent of left testis; unsuccessful orchidopexy at 7 years

Injection treatment at 12 years; small left testis over pubis; genitalia otherwise normal.

Result—(16 injections) Hypertrophy of genitalia; no descent

CASE 19 —Imperfect descent of right testis, unsuccessful orchidopexy at 4 years
Injection treatment at 6 years, right testis at external ring, genitalia well developed
Result —(12 injections) Hypertrophy of genitalia, no descent

CASE 20 —Imperfect descent of right testis, unsuccessful orchidopexy at 12 years
Injection treatment at 15 years, minute right testis at external ring, genitalia normal
Result —(8 injections) Hypertrophy of genitalia but right testis was unaltered in size and position

COMMENTS

Of the 14 cases that had had no previous treatment 4 have been successful Cases 1, 2, 3 were suffering from bilateral and Case 4 from unilateral maldescent In all 4 the most noticeable feature was the under development of the external genitalia—i e, the testes, penis, and scrotum—before treatment commenced In each case the injections of pregnyl caused hypertrophy of the external genitalia, followed by descent of the testes

The remaining 10 cases were unsuccessful, 4 of these were bilateral. Case 5 appeared similar to Cases 1, 2, and 3, so treatment was persevered with It has now been stopped as the external genitalia have hypertrophied without descent of the testes Cases 6 and 7 both had well developed genitalia when first seen and treatment was stopped in view of the further hypertrophy observed. Both have had satisfactory Torek operations since and in each case it was found that the testis had emerged from the external ring in front of which it was lying The presence of retaining fibrous bands showed that no treatment other than operation would have been of any use in these two cases The other bilateral case (Case 8) was of the Fröhlich's type and although there is slight enlargement of the penis and scrotum and a thin growth of pubic hair, there is still extreme hypoplasia of the genitalia and the testes cannot be palpated

The remaining 6 cases were all unilateral and in all the genitalia were well developed before treatment commenced Pregnyl injections have in each case produced hypertrophy of the penis, scrotum, and both testes, but no descent of the retained testis, and because of this hypertrophy the treatment has been abandoned

In the second group (after unsuccessful orchidopexy) there were two successes, which had both been the subject of bilateral Bevan operations In both the genitalia were very small and the scrotum in particular was very badly developed. In each the course of pregnyl injections has produced hypertrophy of the whole genital apparatus and descent of the testes into the scrotum The increase in size of the testis and the greater development of the scrotum seem to be the factors which cause descent The other patient with bilateral imperfect descent of the testes in this group (Case 17) had undergone an unsuccessful Bevan operation on both sides The genitalia were very small and the testes appeared to be atrophied The injections of pregnyl have produced no change in relation to development of the genitalia or descent of the testes and it is probable that the blood supply of the testes was interfered with at operation The other three cases were all unilateral and in two (Cases 18 and 19) hypertrophy of all the genitalia, without descent of the retained testis occurred A further operation of the Torek type is advised for these cases In Case 20 the treatment produced hypertrophy of the genitalia with the exception of the imperfectly descended testis, this is very small and has probably had its blood supply interfered with

THE INDICATIONS FOR THE USE OF GONADOTROPIC HORMONES

In this small series one result of this method of treatment is very evident—the hypertrophy of the genital apparatus, i e, the penis, scrotum, and testes, In a few cases there was also growth of pubic hair Only one patient has failed to show hypertrophy (Case 17) and he probably has atrophic testes after a previous unsuccessful operation The one patient of the Fröhlich's type (Case 8) has shown little change but injections will be continued after two months' rest

This question of hypertrophy of the external genitalia, including the penis and scrotum, is obviously of importance, yet certain authors make no mention of this in their reports on the use of gonadotropic hormones

Spence and Scowen (1935) state that in several of their cases there has been some enlargement of the testes during treatment, and in a few slight enlargement of the penis and growth of the pubic hair McLellan (1936) states that the undescended testis becomes larger, heavier and more mobile, but makes no reference to general enlargement of the genitalia, and elsewhere he states that no harm can be done by a trial of this treatment Webster (1935) reports 10 good results out of 11 cases treated by gonadotropic hormones, and mentions only that enlargement of the imperfectly descended testis occurred

On the other hand, Goldman and Stern (1933), Sexton (1934), and Aberle and Jenkins (1934) have all noted, in some cases, enlargement of the whole external genitalia as a result of treatment with gonadotropic hormones

In this series every case except Case 17 has shown definite hypertrophy of the genitalia In one, Case 11, gross hypertrophy occurred and in the majority the treatment was stopped for this reason

I consider therefore that injection of pregnyl is much more likely to produce genital hypertrophy than descent of a retained testis and that this should be borne in mind by anyone advocating this method of treatment I now endeavour to select those cases that are suitable for hormone therapy, as I feel that there are definite objections to the treatment

From the point of view of treatment with gonadotropic hormones, the cases can be grouped as follows

A. *Bilateral imperfect descent* —1 With well-developed genitalia and the testes probably retained owing to some mechanical cause Case 6 is a good example of this type The effect of pregnyl here is to produce hypertrophy and not descent, and in my opinion operation is the only treatment In this group I place Cases 6 and 7

2 With poor development of the whole genital apparatus Pregnyl here will produce development of the whole genitalia and the increase in size of the testes and scrotum may allow the natural position to be gained Of the 6 satisfactory cases 5 come into this group (Cases, 1, 2, 3, 15, and 16) Case 5 also belongs to this group, but descent has not occurred

3 Associated with Fröhlich's disease Here pregnyl also seems indicated, although in my own case (Case 8) no success has as yet been attained

B *Unilateral imperfect descent* —In nearly all cases the other testis and the penis are reasonably developed, since hypertrophy will occur I think pregnyl should never be employed in *unilateral maldescent of the testis* Case 4 is listed as a success, but as the scrotal testis had descended late it is possible that descent and normal development would have occurred spontaneously

C *Testes which are definitely ectopic in position* —Spence and Scowen have pointed out that on anatomical grounds the method cannot succeed

In our present state of knowledge there are obvious objections to the indiscriminate use of these prepara-

tions which produce genital hypertrophy Cabot (1936) has referred to the possibility of late atrophy of the testes; Cole (1936) has produced atrophy of the tubules in experimental animals by high dosage Evans is quoted by Goldman and Stern (1936) as having produced damage and ultimate decrease in weight in the testes of rats In this series Case 11 showed gross hypertrophy of the genitalia at the termination of treatment Three months later considerable retrogression in size had occurred and at the subsequent operation to fix the testis in the scrotum the testis was found to be very small. Goldman and Stern (1936) and other authors have commented on the possible development of precocious sexual maturity and this must be accepted as another definite risk of the treatment For this *reason they and Engle (whom they quote)* consider nine as the earliest age at which treatment with gonadotropic hormones should be started.

The present position therefore is that injection of gonadotropic hormones will produce hypertrophy of the genitalia; the nature of the hypertrophy is not yet certain but there is no doubt that some retrogression can occur and there is a possibility of ultimate damage to the testis There is also a risk of producing premature sexual maturity which at any rate may prove undesirable.

For these reasons I consider it unjustifiable to employ this treatment in any case where part of the genital apparatus is normal in development Moreover my findings suggest that pregnyl is unlikely to produce descent of a unilateral retained testis or of bilateral retained testes with good genital development Where both testes are undescended and the genitalia are under-developed the effect of treatment is to produce hypertrophy approaching the normal and it is in this class of case that successes are likely to occur

It is difficult to believe the accuracy of reports of successes after a few injections and one wonders how many of the successes claimed for gonadotropic hormones in the treatment of imperfect descent of the testis were really obtained in cases of retraction of the testis.

I have seen no case of descent where hypertrophy did not also occur

SUMMARY

1 Twenty patients with imperfect descent of the testis have been treated with pregnyl.

2 Hypertrophy of the external genitalia has been obtained in 10 patients

3 Descent of the testes has been obtained in 6 patients (5 bilateral, 1 unilateral)

4. It is suggested that in view of complications treatment with gonadotropic hormones should be used only in bilateral cases with subnormal genital development

I am greatly *indebted to the surgeons of St Thomas's* Hospital for their kindness in referring these cases to me and especially to Mr C Max Page under whose direction this work has been performed

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THE FOURTH OR APICAL ELECTROCARDIOGRAPHIC LEAD

WITH REPORTS OF THREE CASES OF CORONARY THROMBOSIS WITH ELECTROCARDIOGRAMS

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In 1932 *papers by Wolferth and Wood and other* authors[1 2 3 4 5 6 7 8] began to appear in America dealing with a series of electrocardiographic leads which they called chest leads The first of these anterior chest to posterior chest was obtained by using the right-arm electrode on the front of the chest wall and the left-arm electrode behind To this lead IV they soon added leads V and VI In lead V the right-arm electrode remained on the chest and the left-arm electrode was shifted to the left foot; in lead VI the right-arm electrode is employed over the scapula whilst the left-arm electrode remained on the left foot This last gave a stunted tracing not unlike lead III which did not prove of definite clinical value In leads IV and V the tracing is essentially the same as it was soon found that, so long as it was sufficiently far from the heart the position of the indifferent electrode did not matter For convenience the posterior chest position of this electrode has been abandoned and thus by lead IV is now usually meant a tracing taken from the anterior chest wall to the left leg using the right arm electrode on the chest wall and the left-arm electrode on the left foot The position of the chest lead is of paramount importance The fourth interspace is now generally adopted as that position is over the ventricles in practically all chests and is more reliable than the fifth interspace with the patient recumbent The tracing gives a very slight P which is usually inverted a large Q and usually an inverted T (Fig 1) It is like an exaggerated inverted lead I

As these chest leads are being used in conjunction with the standard *leads it has been suggested* by Roth (1935) that the right arm electrode should be kept on the right arm and the left arm electrode used for the apical lead In this way a tracing distinctly analogous to the standard leads will be obtained showing the exaggerated complexes of the new leads without the inversion But the leads employed by the pioneers have had a long start and are now not likely to be displaced especially since they have been the subjects of much study and many papers published in America, chiefly in connexion with coronary sclerosis and thrombosis

The first papers were too critical of the older leads and too favourable to the new ones but gradually a more judicious view has prevailed and the precordial lead now seems certain to amplify *but not to suppress* standard electrocardiography The present view may be summarised as stating that in anterior lesions the large Q wave disappears and the R–T interval becomes depressed In the course of *some days* T_4 *becomes* upright but the Q_4 remains absent permanently This gives a very striking tracing as Q_4 of considerable size is present in all normal hearts and its absence leaps to the eye The only other condition in which Q_4 is commonly absent is in bundle branch block In the posterior lesions the findings are less definite There is an early elevation of the R–T interval which disappears in a few days leaving sometimes a pronounced inversion of T_4

CASE 1 —A doctor, aged 56, consulted Mr Seton Pringle about an acute abdominal pain He stated that he had had epigastric pain for some weeks and had been under treatment for a duodenal ulcer While in bed, taking light diet and alkalis, he had been much better, but the pain returned when he began to move about again He now felt he had appendicitis I saw him next day as the symptoms did not suggest an acute abdomen to Mr Pringle His pulse was normal and his heart sounds clear, there was no murmur The blood pressure was 136/90 mm Hg

He had a severe pain in the epigastrium, which was tender but not rigid, the pain passed through to the back but did not radiate to the arms On close questioning he admitted urgent dyspnœa for some weeks when going upstairs I suspected a coronary thrombosis, and when the patient was fit to move had an electrocardiogram taken It showed a very marked inversion of T_1 He was informed of the diagnosis and advised accordingly

Nearly two years later I was called urgently to the same patient whom I found in very extreme pain, again referred to the epigastrium He told me that his duodenum must have perforated During the interval he had had constant dyspnœa relieved by trinitrin I took an electrocardiogram on the spot (Fig 2) There was again T_1 inverted and a nodal rhythm Lead IV was very typical showing absence of Q and upright T His pulse was 100 and blood pressure 120/90 mm Hg He was given a large dose of morphine and dozed throughout the day with intervals of pain At 9 P M he suddenly began to wheeze and to cough, a short explosive effort with very rapid respiration and cyanosis The sputum which came up freely was pink froth This was relieved by morphine gr 1/3 with atropine gr 1/25 Next morning he was cold and cyanosed His features were pinched He had now pain in the left arm for the first time Dr Henry Moore saw him with me at 1 30 P M when he was more collapsed with systolic blood pressure under 100 That evening at 7 he had a further attack of left ventricular failure He died suffocated in my presence within five minutes of the attack's commencing with frothy pink mucus pouring from his mouth

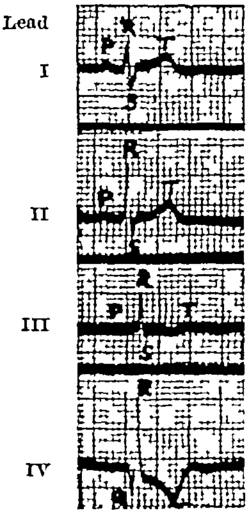

FIG 1.—Normal In lead IV prominent Q and inverted T

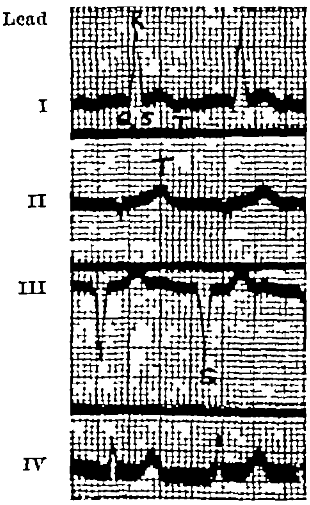

FIG 2 (Case 1)—Absence of P waves Splintering of Q R S complex inverted T_1 upright T_3 In lead IV absent Q and upright T

CASE 2 —A doctor, aged 79, was seen at his house in the country with Mr T J D Lane He had severe precordial pain of a squeezing type which radiated down his left arm For the past couple of weeks this pain had forced him to sit on the side of his bed for hours at night but he had continued his practice all day He admitted angina of effort for a few months An electrocardiogram taken on the spot showed low voltage complexes with T_1 inverted and lead IV of the typical coronary type (Fig 3) He was removed to a nursing home in Dublin where in spite of large doses of morphia the pain continued for two days He vomited a great deal On the fifth day his feet began to get cold, blood-stained blobs appeared on the skin Next day he was a little better and showed gradual improvement for five days further The urgency of the dyspnœa lessened, and he was able to spend all night asleep On the eleventh day, when apparently better than ever previously, he expired instantaneously while sitting up talking in bed

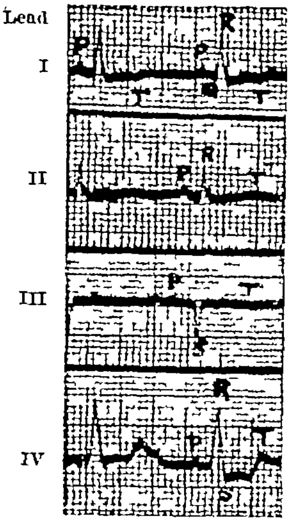

FIG 3 (Case 2)—T_1 almost iso-electric, inverted T_2, and T_3 iso-electric In lead IV absent Q depressed ST interval and upright T

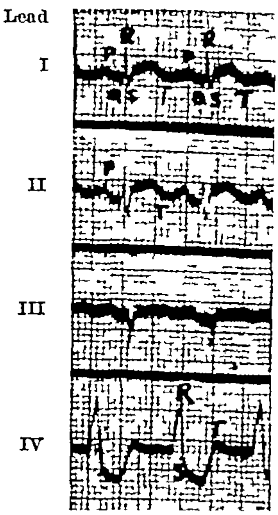

FIG 4 (Case 3)—Coved ST interval in leads I and II In lead IV absent Q depressed ST interval and upright T

CASE 3 —A farmer aged 39 A very strong robust man was, on Sept 20th, 1936, referred by Dr W F Foley of Tullow He had had severe pain for two days, radiating down both arms The pain was constricting and crushing in type and was located in the epigastrium rather than in the precordia The temperature was 100 6° F pulse rate 120 Gallop rhythm was present White cell count 17,800 He had been seen by Mr James Owens, who had excluded an upper abdominal lesion An electrocardiogram showed a coved R–T interval in leads I and II, and an absent Q and upright T in lead IV (Fig 4) He required very large doses of morphia, averaging one and a half grains per diem for five days The temperature ranged from 99° to 101° F for this period, gradually reaching normal The patient had drenching sweats during these days He has since progressed favourably For reasons other than medical it was necessary to allow him to return home by ambulance after three weeks He is now doing a little supervising and has had a couple of slight attacks of pain on exertion

SUMMARY

In these three cases the standard leads show typical abnormalities, which are much more marked in Case 3 than in the other two Lead IV shows pronounced changes in all the tracings This is very evident in Case 2, in which the alterations in the standard leads are not striking

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THE FOUR LEAD ELECTROCARDIOGRAM IN CORONARY DISEASE

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WHEN the heart current is recorded by means of an electrocardiograph the form of the electrical curve obtained may be altered by varying the position of the electrodes on the body surface The three standard leads for the clinical electrocardiogram were introduced in 1902 by Einthoven who applied electrodes to the two arms and the left leg and connected them in pairs to the string galvanometer Until recently our knowledge of the normal and pathological electrocardiogram in the human subject has appertained almost entirely to these three conventional limb leads.

The clinical value of leads attached to the chest has only been appreciated during the last five years

In 1887 Waller the first to obtain electrical records of the human heart applied electrodes to the chest the limbs and the mouth and in 1909 Lewis employed chest leads in investigating auricular fibrillation It was not until 1932 that Wolferth and Wood, following their electrocardiographic study of experimental coronary occlusion (1933) advocated the use of an antero posterior chest lead in addition to the three limb leads, in the diagnosis of coronary occlusion in man Since this date experience of direct chest leads has been extended mainly in America and in 1936 Graybiel and White in a review of the present position concluded that the antero posterior chest lead had a definite value, especially in the localisation of cardiac infarction

The object of this communication is to report the changes observed in the antero posterior chest lead (lead IV) in a series of 102 consecutive cases of angina pectoris including 40 with coronary thrombosis and to evaluate the advantages of the four lead over the conventional three lead electrocardiogram

TECHNIQUE

Of the various chest leads employed one in particular called lead IV has proved most informative Wolferth and Wood applied the right arm electrode to the front of the chest over the apex beat and the left-arm electrode to the back of the chest between the angle of the left scapula and the spinal column following their practice adopted in experimental direct chest leads This procedure has been adopted by other American cardiologists [3, 6, 7, 10, 11, 14, 16, 17] The normal lead IV thus obtained is comparable with a standard lead in which all the deflections are inverted or in other words with a standard lead taken with the electrodes reversed (Fig 1c) It seems undesirable to introduce a new lead in which accepted criteria of normality are inapplicable when by a simple reversal of the electrodes it can be made to conform to conventional standards We have therefore applied the left-arm electrode anteriorly and the right-arm electrode posteriorly a practice already followed by Jervell (1935) and others [1, 13, 16, 20] and one which we hope will be generally adopted

The electrodes used in this investigation have been rectangular strips of German silver measuring 2½ in by 1¼ in supplied by the Cambridge Instrument Co and for a contact medium the Electrode Jelly of the same firm The left-arm electrode is applied over the apex beat or if this cannot be localised over the fourth intercostal space just to the left of the sternum and the right-arm electrode to the posterior chest wall, between the left scapular angle and the spine they are fixed in position by adhesive strapping

The position of the anterior electrode is the most important factor in determining the form of the electrocardiogram [3, 14] and it must be kept between the left sternal border and the cardiac apex The position of the posterior electrode may be varied considerably without appreciably affecting the electrocardiogram and a comparable curve is still obtained if this electrode is kept on the right arm, as preferred by Roth (1935) When patients were too ill to be moved in bed we have therefore used the apex right-arm lead of Roth in preference to the antero posterior chest lead

THE NORMAL LEAD IV

The form of lead IV in the healthy heart has been well established [5, 6, 13, 14, 17] and we have confirmed this in a series of 30 normal controls The following description applies to the antero posterior chest lead with the *left-arm* electrode placed *anteriorly* all deflections being of opposite sign compared with Wolferth and Wood s lead IV

The P wave is upright and of smaller amplitude than in the limb leads The RS complex is larger than in limb leads and is always diphasic, the initial deflection being positive and the positive and negative components approximately equal in amplitude The T wave is positive sharply peaked and large sometimes attaining an amplitude of 10 mm The iso-electric R–T segment is of short duration and may be elevated by 2 mm or depressed by 1 mm but not beyond these limits in health A positive U wave is frequently observed (Fig 1A) Using the apex right arm lead advocated by Roth the only significant difference is a larger P wave and a shift in the axis of the RS deflections (Fig 1B)

ABNORMALITIES IN LEAD IV

The same modifications are equally possible in lead IV as in limb leads namely widening and notching of the RS deflection, the presence of a Q wave deviation of the R–T segment from the zero level, flattening or inversion of the T wave and changes in rhythm A positive T wave exceeding 10 mm in amplitude called huge by Wolferth and Wood (1934) sometimes occurs and is to be regarded as pathological. Absence of the R wave or reduction of its amplitude to below 2 mm has been emphasised as evidence of myocardial disease and especially of anterior infarction by Levine and Levine* (1936) and has been observed in some but not all cases of anterior infarction by Jervell (1935) A small or absent R wave also occurs in the lævographic type of bundle branch block [11, 14] (left or Type I bundle branch block in the new terminology) Our results confirm that there is no characteristic shift in the axis of lead IV in association with left ventricular predominance [3, 6] Digitalis affects lead IV in the same way as it does the limb leads and we have observed a typical depression of R–T in several cases taking digitalis Strauss and Katz (1935) found that in normal subjects digitalis might deviate the R–T segment in either direction and flatten or reverse the T wave

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Absent Q wave with their technique

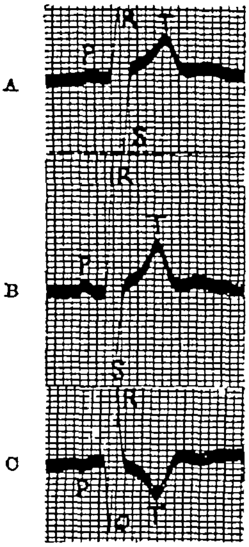


FIG 1—Normal lead IV

A Technique used in this investigation with the left arm electrode on the cardiac apex right arm electrode at left scapula angle Note small P, RS biphasic with equal components, T upright

B Roth's method with left arm electrode on apex, right arm electrode on right arm Note larger P and shift in axis of RS

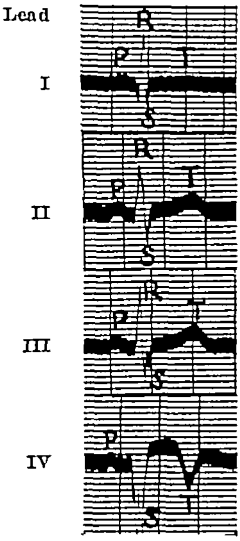


FIG 2 (Case 6)—Male aged 48 Angina of effort Absence of significant changes in limb leads with altered lead IV (R wave absent, S notched, R–T elevated, T inverted)

FIG 1 (*continued*) C Wolferth and Wood's method, with right arm electrode on apex, and left arm electrode on left scapula angle Note Q wave negative P and T waves

LEAD IV IN ANGINA PECTORIS

Four-lead electrocardiograms were obtained in 62 cases of angina of effort, 39 of which were men, 23 women. In 34 cases there were no significant changes in any of the four leads, in 11 both the limb leads and lead IV showed evidence of myocardial disease In 9 cases the limb leads were abnormal when lead IV was normal or showed only indefinite changes In 8 cases lead IV showed a significant abnormality when the limb leads were normal (see Table I and Fig 2)

TABLE I—*Angina of Effort* (62 Cases)

LEADS I II III	LEAD IV					
—	Normal	Normal T with abnormal R–S	R absent	T negative	T biphasic	T over 10 mm amplitude
Normal	6	3	1	1	0	1
Normal with left axis deviation	8	7	2	1	1	0
Normal with T_3 negative	6	4	0	0	1	0
T_1 negative	3	1	0	0	0	0
T_1 and T_2 negative	2	1	1	1	1	0
T_2 and T_3 negative	1	1	0	0	0	0
Abnormal Q R S (including 6 cases with bundle-branch lesion)	0	7	0	0	0	1

Thus in approximately 13 per cent of cases in this series lead IV provided evidence of myocardial disease which the three lead electrocardiogram failed to show In two instances in which this occurred there was a steeply inverted T wave in lead IV Both patients concerned (Cases 6 and 28) gave a history of previous attacks of severe and prolonged pain, suggestive of coronary occlusion These are of interest, since Edeiken, Wolferth, and Wood (1936), in a recent paper, have stressed the importance of a reversed T wave in lead IV, when it appears as the sole abnormality in the adult electrocardiogram They consider it highly suggestive of coronary disease, an inference which is supported by these cases, but on which some doubt had previously been cast by Levine and Levine (1936)

LEAD IV IN ACUTE CORONARY OCCLUSION

Four-lead electrocardiograms were obtained from 40 patients during or shortly after typical attacks of coronary thrombosis, and in 24 cases serial records were taken Of the patients 8 died, and in 5 necropsies were performed There were T_1 type electrocardiograms in 20 cases, T_3 type in 15, and atypical curves in 5 (see Table II)

T_1 type of electrocardiogram—Lead IV was abnormal in all 20 cases, and in 14 of them the abnormality was most evident in lead IV Serial records showed that at particular stages lead IV alone might be abnormal Thus in 7 cases at an early stage, and in 4 cases at a late stage, the only significant electrocardiographic changes were in lead IV (see Table II) In the T_1 type of curve, lead IV exhibits the same changes as lead I,[8 13 16 26] but often in an exaggerated form (Figs 3 and 4) Thus the R–T segment is elevated and the T wave inverted Often the R wave is small (2 mm or less in amplitude) or absent,[8 11 16 26] and this abnormality may be more persistent than T wave changes It

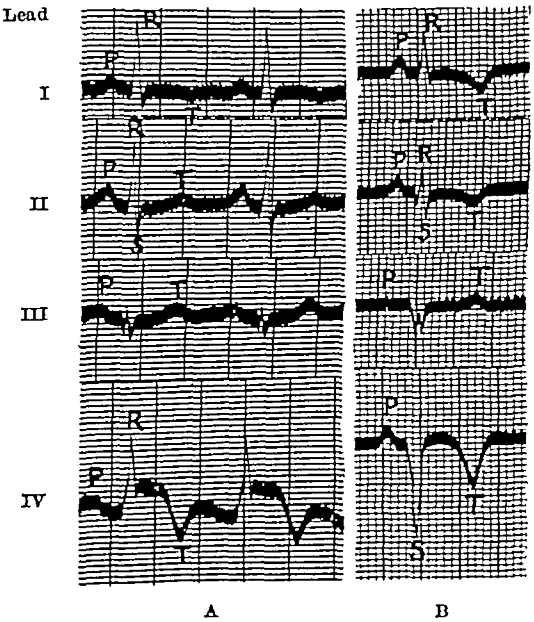
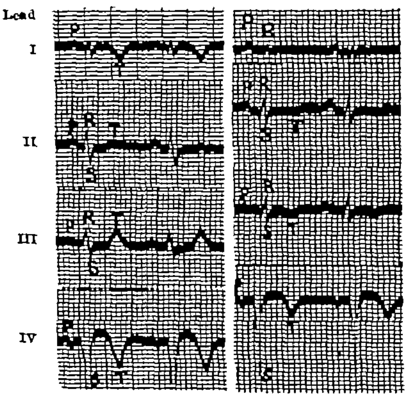


FIG 3.—Value of lead IV in early diagnosis of coronary thrombosis (T_1 type)

Case 81—Male aged 60 Acute coronary occlusion on August 29th Note diagnostic changes appearing earlier in lead IV

A Sept. 2nd limb leads slight inversion of T_1 only Lead IV characteristic elevation of R–T and inversion of T

B Oct 14th leads I and II T inverted Lead IV absent R, slight R–T elevation, T steeply inverted



A B

FIG 4—Value of lead IV in late diagnosis of coronary thrombosis (T type)
Case 68 —Male aged 61 Acute coronary occlusion on Oct. 12th 1935 Note changes persisting later in lead IV than in limb leads

A. Oct 17th All leads characteristic.
B July 29th 1936 changes in limb leads now indefinite Lead IV still abnormal (R absent R–T elevated, T inverted)

has occurred in 12 of our cases in 5 of which it was present at a late stage In 2 cases huge inverted T waves were seen The characteristic alterations of the R–T segment and T waves may occur sooner and last longer in lead IV than in standard leads

These changes are well illustrated by the following patient —

Case 81 a man aged 60 who was admitted to hospital four days after a typical attack of acute coronary occlusion

TABLE II*—*Acute Coronary Occlusion* (40 Cases)

—	T_1 type.	T_2 type	Anomalous.
Total cases	20	15	5
Lead IV normal	0	5	1
Lead IV abnormal	0	10	4
Lead IV abnormal with normal leads I II III	8	0	0
Changes more pronounced in leads I II III	4	15	3
Changes more pronounced in lead IV	14	0	0
Changes equal in all four lead	10	5	3

* Serial electrocardiograms were taken in 21 of these cases so that in some instances several records from one patient are included in the Table.

The electrocardiogram then showed obvious elevation of the R–T segment and inversion of T in the chest lead but no characteristic alteration of the limb leads (Fig 3A) Diagnostic changes did not appear in lead I until 3 days later In serial records extending over 7 weeks R–T elevation persisted in lead IV but disappeared in lead I after 5 days the T wave remained inverted in both leads but more deeply in lead IV (Fig 3B) The R wave in lead IV was absent after the 5th day of observation

In another patient (Case 68) a man aged 61 lead IV 23 weeks after acute coronary occlusion showed absence of the R wave elevation of the R–T segment and inversion of T, when the limb leads were not significantly altered (Fig 4)

T_2 type of electrocardiogram.—Lead IV was abnormal in 10 of the 15 cases but in none were the changes more evident in lead IV and often they were less evident than in standard leads (Figs 5 and 6) (see Table II) When lead IV was modified, it resembled lead I showing a depression of the R–T segment and an upright T wave In 3 cases huge upright T waves were seen (Fig 7) Occasionally lead IV showed an elevation of the R–T segment with a negative T wave, the significance of which is discussed later

Anomalous curves—In one patient (Case 101) the standard leads showed R–T depression in leads I and II and R–T elevation in lead III with upright T waves lead IV showed absence of R waves with elevation of R–T The post mortem findings are given in Table III In another (Case 102) the standard leads showed R–T elevation in leads II and III with inversion of T in all leads lead IV was normal. In 3 cases the standard leads revealed lævographic bundle branch block in these lead IV presented a small R wave and abnormal ventricular complexes closely resembling those in lead III but of greater amplitude

LOCALISATION OF CARDIAC INFARCTION

In 1928 Parkinson and Bedford showed that electrocardiograms from cases of acute coronary occlusion conformed to two main types and in 1929 Barnes and Whitten correlated these two electrocardiographic patterns with the site of the cardiac infarct, the T_1 type of curve corresponding to anterior infarction and the T_2 type to posterior infarction of the left ventricle These observations relate to standard three lead electrocardiograms More recently the use of various chest leads in the localisation of infarcts has been investigated especially by Wolferth and Wood[23 24 25 26] who recommend three

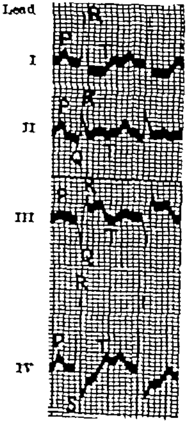


FIG 5 — R–T depression in lead IV
Case 100 —Male aged 62 Acute coronary occlusion on August 31st Electrocardiogram on same date showing limb leads with characteristic T type changes and R–T depression

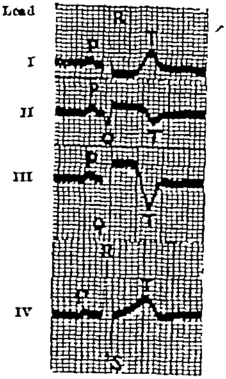


FIG 6.—Coronary thrombosis (T type) with lead IV unaltered
Case 91 —Female aged 66 Acute coronary occlusion on May 6th Electrocardiogram on May th showing typical appearance of limb leads with lead IV normal

chest leads (leads IV, V, VI), but the value of leads V and VI seems doubtful. Abramson and Weinstein[1 20] have employed chest leads in experimental coronary occlusion, and various clinical investigations relative to localisation of the infarct by chest leads have also been reported[8 11]

Acute anterior infarction—The standard leads show elevation of R–T_1 and depression of R–T_3, followed by an inversion of T_1 and often of T_2 Lead IV usually shows an elevation of R–T and inversion of T, in addition absence or diminished amplitude of the R wave is common

Acute posterior infarction—There is usually elevation of R–T_3, and depression of R–T_1, followed by inversion of T_3 and often of T_2 A large Q wave in lead III is commonly found Lead IV may show little change in posterior infarction, but if altered, there is a depression of R–T and a high positive T wave

Acute anterior and posterior infarction—When acute infarction involves both the anterior and posterior surfaces of the heart, Wolferth and Wood have found that the R–T segment is elevated in all limb leads, the maximum elevation being in lead II, in lead IV the R–T segment is also elevated—i.e., elevated with left arm electrode anterior as in our observations but depressed with right-arm electrode anterior There may be a large Q_3 suggesting posterior infarction, combined with an absence of R_4 suggestive of an anterior infarction

Other changes—Jervell attributes elevation of R–T_4 and inversion of T_4 to infarction involving the apex, and when this occurs in association with the T_3 type of curve it is explained by a posterior infarct encroaching on the apical region Huge T waves in lead IV, over 10 mm in amplitude, and either positive or negative, suggest localised apical infarction[25]

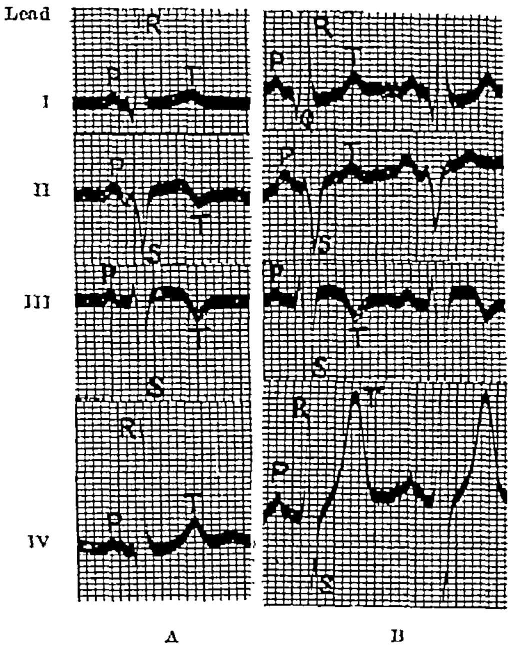


FIG 7—Huge T waves in lead IV
Case 99—Male aged 69 Acute coronary occlusion on August 1st

A August 12th Limb leads typical of T_3 type coronary thrombosis No significant change in lead IV
B Sept 5th T_3 inversion and R–T_3 elevation persist Lead IV with huge positive T (21 mm)

Post mortem evidence—Of the 6 cases that came to post mortem, 3 (Cases 87, 88, 94) showed posterior infarction (Table III), the electrocardiographic diagnosis of these had been made correctly in life by means of the limb leads, which were of the T_3 type In two lead IV was normal (see Fig 6), in the third (Case 87, Table III) the R wave was absent in lead IV, with slight elevation of the R–T interval This suggested myocardial disease possibly due to a previous anterior infarct and in fact, the necropsy revealed narrowing of the left coronary artery at its origin with patchy fibrosis of the anterior wall of the left ventricle In the remaining three cases lead IV was of more definite value The first (Case 10) was a man with syphilitic aortitis The only abnormality in the electrocardiogram was a positive T wave in lead IV of over 10 mm amplitude This suggested a localised apical infarct, which was subsequently confirmed The second (Case 82) showed the T_1 type of curve in the limb leads, with very pronounced R–T elevation, and in lead IV a negative T and absent R wave Anterior infarction was diagnosed, and an anterior and apical infarct was found post mortem The last (Case 101) showed depression of the R–T interval in leads I and II, with elevation in lead III In lead IV

TABLE III—LOCALISATION OF CARDIAC INFARCT (6 Post mortem cases)

Case	Age	Clinical diagnosis	Leads I II III	Lead IV	Electrocardiographic diagnosis of site of infarct	Necropsy
10	48	Syphilitic aortitis angina pectoris	Normal	Positive T wave exceeding 10 mm	Lead IV – apical	Syphilitic aortitis Left coronary orifice occluded right stenosed Apical infarct small apical cardiac aneurysm
87	50	Coronary thrombosis (intermittent bundle branch lesion)	(1) Bundle-branch lesion (lævographic) (2) R–T_3 elevated R–$T_{1,2}$ depressed	(1) Bundle branch lesion R small (2) R–T elevated T positive	Limb leads – posterior Lead IV – myocardial disease ? previous anterior infarct	Left coronary artery stenosed at origin circumflex branch occluded Right coronary occluded Posterior infarct Patchy fibrosis of left ventricle anterior surface
88	54	Coronary thrombosis	T_3 negative T_2 flat Q_3 large	Normal	Posterior	Left circumflex coronary artery occluded right coronary occluded Posterior and apical infarcts
94	66	"	R–$T_{2,3}$ elevated R–T_1 depressed $T_{2,3}$ negative	"	"	Left coronary artery patent right occluded Posterior infarct Ruptured left ventricle posteriorly
82	56		Low voltage Q R S R–$T_{1,2}$ elevated $T_{1,2}$ negative	Marked elevation of S–T R absent T negative	Anterior	Left coronary anterior descending branch occluded right coronary stenosed but patent Anterior and apical infarcts
101	63	"	R–T_1 depressed R–T_3 elevated	R absent R–T elevated	Limb leads – posterior Lead IV – anterior	Left and right coronary arteries occluded Antero posterior infarct of apex

the R wave was absent and the R–T interval elevated. These changes pointed to antero-posterior infarction which was confirmed post mortem.

Comment.—This is too small a series from which to draw conclusions but, when considered with the literature on the subject, it does indicate that the four-lead electrocardiogram is helpful in the diagnosis of anterior and antero-posterior infarction.

SUMMARY AND CONCLUSIONS

Lead IV is the name given to the antero-posterior chest lead, and its value lies in the diagnosis of coronary disease.

By means of the four-lead electrocardiogram we have investigated 102 consecutive cases of cardiac pain, using a technique which differs from that originally described by Wolferth and Wood. The chest leads have been reversed—i.e., the left-arm electrode in the anterior position—giving a lead IV comparable with the standard limb leads I, II, and III. We hope that this modification will come into general use.

In 8 out of 62 cases of angina of effort lead IV provided evidence of myocardial disease not given by the three-lead electrocardiogram. We have confirmed the value of lead IV particularly in the diagnosis of left coronary artery occlusion.† Characteristic changes may appear earlier or last longer in this lead; they resemble those in lead I. The four-lead electrocardiogram is useful also in the localisation of cardiac infarction, particularly in combined acute left and right coronary artery occlusion. This is substantiated by our post-mortem material.

We recommend the routine use of the four-lead electrocardiogram in the investigation of every case of cardiac pain.

We are indebted to Dr G. E. S. Ward and Dr D. Evan Bedford, under whose direction this work has been carried out; to the other physicians on the staff of the Middlesex Hospital for permission to use certain cases under their care; and to Prof. James McIntosh for permission to analyse our pathological material. We also wish to express our thanks to Mr E. Bridger, cardiographic technician, for his helpful coöperation throughout.

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† T₁ type of electrocardiogram.

DEFENSIVE ROLE OF BILIRUBINÆMIA IN PNEUMOCOCCAL INFECTION

By Najib Farah, M.D.
FORMERLY INSTRUCTOR IN THE AMERICAN SCHOOL OF MEDICINE, BEIRUT

The discovery of pneumococci in cultures from the blood of a patient with long-standing subacute rheumatism (Najib-Farah 1933) led me to study the part played by the pneumococcus in rheumatic infections. It occurred to me that the defence of the body against this organism might perhaps be related to the solubility of pneumococci in bile, which is the basis of Neufeld's method of distinguishing pneumococci from streptococci. With this in mind I examined the blood of 17 patients with acute rheumatism and found that in all of them it showed abnormally large quantities of bilirubin. The values obtained ranged from 0·8 to 2·0 units van den Bergh (4–10 mg. bilirubin per litre of blood serum), whereas the normal is usually given as 0·2 to 0·8 unit (or 2–4 mg.). This fits in with the observation that hyperbilirubinæmia is found in infective diseases (Gradwohl 1935, Fellinger and Pfleger 1936) even when the liver is not apparently affected. But I have reason to think that the increase of bilirubin in the blood is not, as has been assumed, evidence of impaired function of the liver but forms part of a protective mechanism designed to overcome infection.

EXPERIMENTS

My first step was to test rabbit serum for bilirubin and I found that it contained none—which may explain why it is such an excellent medium for cultivating the pneumococcus. From this I went on to test the inhibitory effect of bilirubin on the growth of pneumococci. A series of seven tubes of tyndallised rabbit serum were prepared containing amounts of bilirubin (Merck) ranging upwards from 2 to 8 mg. per litre. (The bilirubin was free from bile salts.) For my test I chose an 18 hours culture of bile-soluble type III pneumococci sufficiently virulent to kill a mouse within 20 hours in a dose of 0·1 c.cm. The seven tubes were numbered 2 to 8 according to their content of bilirubin (2 mg. per litre of rabbit serum, &c.) and to each of them a drop of the pneumococcus culture was added. After 18 hours in an incubator at 37° C. they were again examined, and the findings were as follows:—

Tubes 2 and 3.—Organisms growing fairly well (less so in No. 3) though never abundant. Morphological characters less distinct in No. 3 than in No. 2.

Tubes 4 and 5.—Under the microscope the organisms showed here and there signs of agglutination (Fig. 1) and the beginnings of disintegration (Fig. 2).

Tubes 6 and 7.—All clearly showed bacteriolysis and there were capsular structures or frames of varying length which had lost their contents (Fig. 3).

Tube 8.—Complete lysis of the pneumococci, including their capsules. No growth at all had taken place.

This partial or total solubility of pneumococci in bilirubin has not, I believe, been previously described.

In my second experiment the same culture of pneumococci was added to normal human serum (heated and unheated) and to serum (heated and unheated) from patients with acute rheumatism whose serum bilirubin values ranged from 4 to 10 mg. per litre. I found that the pneumococci grew satisfactorily in the normal serum, though never abundantly as in rabbit serum, but were agglutinated and began to disintegrate in patients' serum containing 4–5 mg of bilirubin per litre The capsular structures were partly denuded of cocci by serum containing 6–7 mg (Fig 4), while complete lysis occurred at 8 mg per litre

My third experiment was to repeat the tests with normal human serum to which bilirubin had been added, using (*a*) mouse virulent streptococci, hæmolytic and non hæmolytic, (*b*) avirulent capsulated type II pneumococci obtained from pneumonic sputum, and (*c*) a mixture of the above virulent type III pneumococci and virulent streptococci In the series of tubes used for avirulent pneumococci the bilirubin content ranged up to 10 grammes per litre of serum The results were as follows —

Streptococcus —Growth normal in tubes containing up to 8 mg of bilirubin per litre No disintegration or lysis observed Agglutination occasionally noted

Avirulent pneumococcus —Growth normal and no signs of disintegration or lysis, even at a concentration of 10 g per litre (Fig 5) This organism was insoluble in bile Agglutination occasionally noted

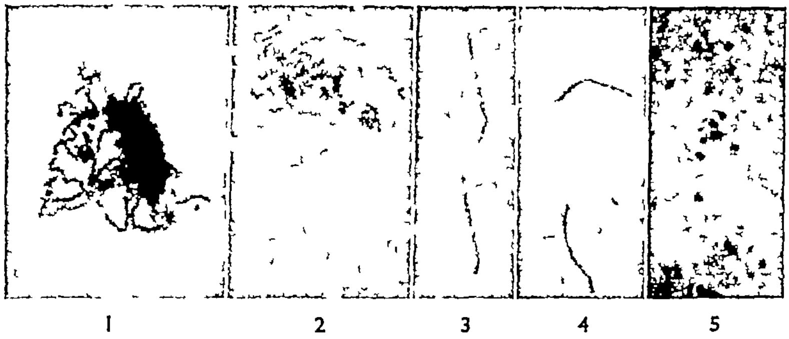

FIG 1 —Agglutination of pneumococci in rabbit serum containing 4 mg of bilirubin per litre

FIG 2 —Disintegration of pneumococci in rabbit serum containing 5 mg of bilirubin per litre

FIG 3 —Pneumococcus culture in rabbit serum containing 7 mg of bilirubin per litre The capsular structure remains but the contents have mostly disappeared

FIG 4 —Pneumococcus culture in human serum containing 6–7 mg of bilirubin per litre (1 3 units van den Bergh) The capsular structure is partially denuded of cocci

FIG 5.—Culture of avirulent pneumococcus in human serum containing 10 g of bilirubin per litre Normal growth No signs of disintegration or lysis

Streptococcus and virulent pneumococcus —Disintegration and lysis of pneumococcus Free growth of streptococcus

Several similar experiments were conducted with various pneumococci of types I, II, and III in rabbit serum Absence of virulence goes with insolubility in bilirubin, as it does with insolubility in bile salts, while moderate or feeble virulence is associated with insolubility or partial solubility It should be recognised however that the solubility (like the virulence) of a culture is liable to vary from time to time

POSSIBLE BEARING ON RHEUMATIC INFECTIONS

I have already given reasons (Najib Farah 1934) for thinking the pneumococcus capable of producing an illness indistinguishable from acute or subacute rheumatism.

Not long ago I saw a boy of 11 with severe sore throat, and succeeded in obtaining both from the blood and the throat a pneumococcus (Type I), which killed a mouse in 28 hours On the first day of the illness there was a bilirubinæmia of 1 2 units (van den Bergh), and from the second to the fifth day it ranged from 1 5 to 2 0 units The symptoms then abated, and the bilirubinæmia fell to 1 35 units, but on the eleventh day the patient developed a characteristic attack of acute rheumatism, and the bilirubinæmia rose to 1 60 units

My own interpretation of these observations is that in the first stage of infection bilirubin is mobilised in the blood to destroy the pneumococcus This leads to the disintegration of the organism with liberation of toxic substance which may be sufficient, after a latent interval, to give rise to the allergic reaction which we recognise as rheumatism Under these conditions, to catch the pneumococcus in the blood, one should search for it as early as possible during the initial sore throat of the disease, for cultures are apt to be negative in the established phase of the rheumatic manifestations

SUMMARY

(1) Seventeen patients suffering from acute or subacute rheumatism showed hyperbilirubinæmia (2) Test showed that rabbit serum does not contain bilirubin (3) Experiment showed that the growth of virulent pneumococci is inhibited by addition of bilirubin to the culture The organisms undergo agglutination and disintegration (partial and complete lysis), the capsules being denuded of their contents The same results were noted in serum of rheumatic patients containing bilirubin from 0 8–2 units (van den Bergh) (4) Some varieties of pneumococcus are agglutinable and soluble in bilirubin solutions, while others are not Solubility varies with virulence (5) *It is suggested that bilirubinæmia* should be regarded not as a sign of hepatic damage but as a means of defence Bilirubin should be then considered as an agglutinin and a lysin in vivo (6) This hypothesis is consistent with the idea that pneumococcal infection may give rise, after a latent period, to acute or subacute rheumatism The germ should be searched for in the blood, particularly in the initial sore-throat phase of the disease

I would like to thank Mr P Karayannis, the chemist of the laboratory of Dr J Papadopoulo, for his valuable assistance in the experimental investigation, and also Dr Papadopoulo himself for his courtesy in allowing me free access to his laboratory, and for his previous collaboration

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Alexandria Egypt

SWANSEA HOSPITAL SERVICE —The Swansea health committee's five years' programme includes a supplemental general hospital with a maternity block, and an expenditure of £15,000 to provide immediate accommodation for maternity cases The new general hospital is estimated to cost £240,000

ANEURYSM OF THE SINUS OF VALSALVA INVOLVING THE CORONARY ORIFICE

BY NORAH H SCHUSTER, M.B Vict
PATHOLOGIST TO THE ROYAL CHEST HOSPITAL, LONDON

IN 1840 Thurnam collected 22 cases of aneurysm of the sinus of Valsalva. In the succeeding years Smith was able to find records only of another 20 This is doubtless due to the feeling that they are sufficiently well known to make further enumeration unnecessary They are nevertheless not often seen in the ordinary way—e g 2 in 3000 post-mortems at the Middlesex Hospital—and the following specimen is unusual enough to warrant publication

Coronary artery aneurysms are nearly always in the first inch of the artery but apart from a case described by Ward there has never been one that included the orifice Neither are they syphilitic as a rule Packard and Wechsler did not ascribe any of their series to that infection Syphilis of the coronary arteries causes obliteration rather than dilatation—Moritz collected 8 cases Two exceptions have recently been published one by Vogelsang and one by Snyder and Hunter who describe a specimen with separate aneurysms of the sinus and coronary artery both syphilitic

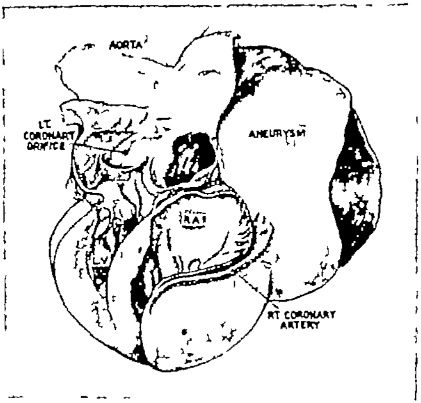
Aneurysms of the sinus of Valsalva on the other hand are usually syphilitic and really belong to the aortic group in fact in 20 per cent. of cases there are said to be aortic aneurysms as well (Smith) A rare type is probably congenital Goehring found 6 examples they were small membranous bulged into the heart and mostly perforated into one of the chambers

The patient a man aged 53 had been discharged from the army for chest trouble He attended Dr Barty King's out patients at the Royal Chest Hospital in 1918 with cough and hæmoptysis In 1920 pulsation on the left of the sternum was felt for the first time He then had clubbing of the fingers and slight cyanosis In 1921 an apical systolic murmur was first heard but the heart was not enlarged The patient also started having dyspnœa and angina pectoris and continued to have them during the succeeding years. The Wassermann reaction was found to be positive Later in the same year there is a note that the heart was enlarged to the left side and that there was a harsh systolic murmur over the precordia loudest in the pulmonary area During this year he had a stroke In 1922 the heart was still enlarged to the left only There was a systolic thrill at the apex, and the precordial ribs were pushed forward by a big powerful heart Breath sounds were almost absent at the right pulmonary base. X ray screening showed a rounded shadow on the left side of the heart but non pulsating The plate confirms it and suggests neoplasm" In 1923 he had pleuritic friction on the left side in front more angina and dyspnœa and the heart was enlarged in all directions Dr A W Stott made the following report: The electrocardiograph shows a flattened T wave in lead I and large upright T wave in leads II and III The R wave in lead II was splintered and there was a deep Q wave in lead III The P–R interval was normal In 1924 the X ray revealed pulsation and the differential diagnosis between neoplasm and aneurysm was again discussed The electrocardiograph was the same as in the previous year

Radiography—In 1925 Dr P Kerley made radiological examinations and gives the following account of the appearances during the next three years There was a pulsatile tumour attached to the left border of the heart shadow just below the left *main* branch of the pulmonary artery Oblique and lateral views showed no connexion between the tumour and the arch of the aorta. The œsophagus and trachea were not displaced ? cardiac aneurysm ? pericardial dermoid cyst ? encysted pericardial effusion. The size and position of the tumour were unusual for a cardiac aneurysm Later radiographs in 1926 and 1927 showed that the tumour had increased in size and was notching the anterior parts of the 3rd and 4th ribs This left no doubt as to the aneurysmal nature of the tumour The arch of the aorta and the pulmonary artery at no time showed X ray evidence of dilatation."

The only change in physical signs between 1925 and 1928 was the increasing size of the heart area and the appearance of a diastolic in addition to the systolic murmur at the apex In 1928 he died suddenly from perforation of the aneurysm into the left pleural cavity

Necropsy—On removal of the sternum a large aneurysm was exposed which covered the whole front of the heart except the apex, and was adherent to its upper half It extended on both sides beyond the borders of the heart especially to the left where it reached beyond the costochondrial junctions, and was firmly attached to the chest wall at the 3rd and 4th ribs Its upper limit was about 2 in above the aortic valve and it burrowed a little between the aorta and pulmonary artery The pericardial sac was obliterated; in places the adhesions were firm and in places they were separable with a thin layer of coagulated blood between the parietal and visceral pericardium



Posterolateral view of the heart The aneurysm has been pulled over to the right to show its size. L.V = left ventricle. R.A = right auricle.

Internally the aneurysm was in relation with the anterior and medial walls of the right ventricle and auricle and the upper anterior corner of the septum The pars membranacea was not involved Part of the internal wall was very hard from calcification and old coagulum; it compressed the right auriculoventricular opening and projected like a wedge into the right ventricle almost dividing it in two and considerably flattening the upper part of the chamber

The orifice of the aneurysm was in the right sinus of Valsalva. It was roughly oval and wide enough to admit half a crown and had a smooth hard rim It led straight into the sac which was large enough to take two fists and had a very rough atheromatous wall with patches of coagulum on it It was so easily torn by the removal of the sternum that the perforation was not identified, but as the left pleural cavity was full of blood there was no doubt of its existence

The distal portion of the right coronary artery was traced along the auriculoventricular groove as far as the aneurysm it then became incorporated in its wall and could be seen as a tortuous ridge running to the inside edge of the orifice of the sac There was no proper opening into the sac but the wall was very atheromatous just there, and a probe entered without difficulty The artery was patent and apparently healthy in the distal portion but not patent in the aneurysmal wall. There was no separate coronary orifice in the right sinus The left coronary artery had a few spots of atheroma and the orifice was slightly contracted The aorta showed syphilitic aortitis and a little pouching just above the aortic valve, there was little or no dilatation of the ascending arch Atheroma extended up the arch and up into the main vessels The left ventricle appeared to be healthy The right ventricle was moderately hypertrophied

The inclusion of the coronary orifice in the aneurysm made it difficult at first to be certain whether the dilatation had originated in the coronary artery or in the sinus of Valsalva, and it was only after the remains of the artery had been dissected that the diagnosis was established Ward recorded a similar aneurysm which he described as having "involved the coronary artery," but Packard and Wechsler, in an analysis of 31 cases of coronary artery aneurysms, regard Ward's as belonging to the sinus of Valsalva

These aneurysms give notoriously complicated physical signs, and they are rarely diagnosed during life In this case the early radiographic reports were misleading, as they persistently suggested neoplasm despite the clinical evidence in favour of aneurysm There was evidently a difference of opinion about the nature and interpretation of the pulsation Smith says that peculiar thrills and noises, especially rough to and-fro murmurs heard best in the pulmonary area, may be suggestive of a sinus aneurysm In this case the most striking features were the sudden onset of marked pulsation and severe dyspnœa with very little cyanosis

Snyder and Hunter discuss the effects of aneurysms bulging inwards and causing heart block by pressure on the bundle of His, or obstructing the auriculo-ventricular passages This aneurysm certainly obstructed the tricuspid valve, and Dr Barty King considers that the apical systolic and diastolic murmurs belonged to that valve He also remarks that the early harsh systolic murmur seemed to originate in the pulmonary artery and might have been due to pressure

The specimen described above was undoubtedly syphilitic, with a good deal of atheroma as well, in appearance it was just like an advanced saccular aneurysm of the arch of the aorta Its size was exceptional, most of the recorded cases having been about the size of a walnut, while some of them were mere pouches Sheldon described a large one in the right sinus which extended towards the right and burst externally, but he does not give the exact size or mention the right coronary orifice

I am much indebted to Dr Barty King for permission to use his notes, and for his interesting comments on the clinical aspects of the case

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CLINICAL AND LABORATORY NOTES

CUTANEOUS MELANOMA

TWO CASES ALIVE THIRTY AND THIRTY EIGHT YEARS AFTER OPERATION

BY J HOGARTH PRINGLE, M B Edin, F R C S Eng
CONSULTING SURGEON TO THE GLASGOW ROYAL INFIRMARY

ABOUT thirty years ago I published a paper[1] describing what I believe was an original method that had not previously been carried out, or even suggested, for operating for melanoma of the skin The principles advocated were

(1) To surround the primary growth with an incision as far removed from it as judged to be necessary

(2) To run from the most convenient point in this generally elliptical or ovoid incision a second one along the normal course of the main lymphatic trunks as far as necessary to allow free removal of at least the nearest lymphatic glands

(3) To reflect the skin well back and to each side from these incisions and excise the tumour with the whole of the subcutaneous tissue exposed containing the lymphatic vessels, the deep fascia of the limb and the fascia propria of muscles exposed along with the lymphatic glands in one continuous strip

The melanomata have a curious tendency to affect the lymphatic vessels in their course between the primary growth and the nearest lymphatic glands and at a comparatively early stage of the disease, a feature which is only rarely seen in other types of malignant cutaneous growths and then in a much later stage The main object of the operation is to remove all subcutaneous tissue in which satellites of the primary tumour might be developing, along with all, or as many as possible, of the main lymphatic vessels passing from the tumour to the nearest glands, in addition to the tumour and the glands

THREE CASES

I only met with three instances of melanoma of the skin in the course of my active work.

CASE 1 —The first was an old man who came to my out-patient department when I was an assistant surgeon at the Glasgow Royal Infirmary He had a small non ulcerated pigmented tumour in the flexure of his right elbow joint, but in addition there was a large mass of glands adherent to the skin and contents of the right axilla and innumerable pigmented nodules varying in size from small shot to a pea, some adherent to the overlying skin, others free from it scattered over the inner and posterior aspects of the right upper arm all the way from the primary tumour to the axilla The condition was considered to be inoperable

CASE 2 —The second patient was a girl aged 17, who was admitted to my ward in the Glasgow Royal Infirmary on Nov 12th, 1898 Her own medical attendant wrote saying he believed she had a melanotic sarcoma of her left forearm Two years before admission she had observed a small growth in the skin of the left forearm It had gradually increased in size and recently rather more quickly She did not admit there had been any wart or mole at that site and no injury could be recalled There was a small nodulated hard tumour measuring 3 5 by 3 cm adherent to and infiltrating the skin at the flexure fold of the left elbow The whole had a brownish colour with deeper brown areas here and there and some bluish black ones It could be moved slightly from side to side but not in the axis of the limb It was situated about mid way between the two condyles of the humerus. The left axillary glands were enlarged but no further evidence of spread was evident The liver was not enlarged and the urine was normal. A coloured sketch was made of the limb and the tumour This is now in the Museum of the Royal College of Surgeons Edinburgh (No 0 (1) b 03)

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[1] *Edinb med J* June 1908

On Nov 18th the tumour with a good area of apparently healthy skin was surrounded by an elliptical incision from the upper end of which a vertical incision along the inner bicipital groove was run up to the apex of the axilla and on to the thoracic wall (Fig 1) The margins of this long wound were dissected back to each side and the skin bearing the tumour with the whole extent of subcutaneous tissue exposed by the reflection of the skin along with the bicipital fascia a strip of subcutaneous tissue at least 2 in in width down to and including the fascia propria of the brachialis anticus muscle were removed along with the fat and glands of the axilla in one continuous strip The margins of the wound with some undercutting near the site of the tumour came together fairly well one relaxation suture was inserted at the gap left by the excision of skin The whole healed well but when the patient was allowed to use the arm a small area at the elbow broke down though it quickly healed and she went home on Dec 24th

The tumour proved to be a melanotic sarcoma and the axillary glands some of which were definitely pigmented were infected The tissues removed at operation owing to a misunderstanding were not preserved after micro scopic examination was made

The patient was seen at frequent intervals She had good use of the arm and remained in good health In 1902 she went to Canada and married and has had three children I have heard from her frequently during the interval; she always sent a good report of herself and of her arm There has never been any further evidence of the tumour; and I have often thought that pregnancy has a remarkable tendency to light up any potential malignant cells that may exist The patient has never been irradiated and has only had the single operation 38 years ago I have recently heard from her and received a photograph which pictures a handsome sonsie lady She writes: I keep real well and my weight is 200 pounds.

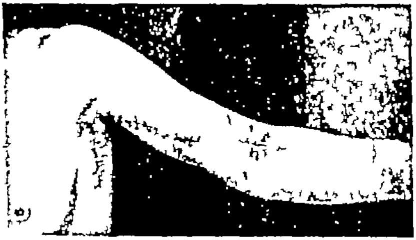

FIG 1 (Case 2) —Position and extent of incision for successful removal of a melanoma of the forearm in a girl aged 17

CASE 3 —The second patient for whom I operated is a man who at the age of 30 was admitted to the Glasgow Royal Infirmary on Oct 27th 1906, with a deep black nodule in the skin measuring 3 by 4 cm at the inner aspect of the left thigh just above the condyle The skin over it was very attenuated but not broken The tumour had developed during the previous two years from a small pigmented mole that had been present from his birth There was a large mass of glands visible in the left Scarpa s triangle which showed a brownish black coloration below the skin which was not adherent Enlarged glands were also palpable above the left Poupart ligament in the iliac fossa The liver was not enlarged and the urine was normal On his body were numerous small " de Morgan spots

On Nov 1st the tumour with the glands of left groin and those in the iliac fossa as far up as the bifurcation of the common iliac artery along with a broad strip of the subcutaneous tissue and the deep fascia of the thigh between the primary growth and the femoral glands, were excised in one strip as in the last patient (Fig 2) The wound healed asep tically The tumour proved to be a melanotic sarcoma the femoral and some of the lowest iliac glands were infected but the higher iliac glands were free of sarcoma cells.

A coloured sketch of this tumour was also made before the operation and is now in the Edinburgh Royal College of Surgeons Museum (No 5 (20) b 3) The specimen is in the Pathological Museum of the Royal Infirmary The patient was brought before a meeting of the Glasgow Royal Medico-Chirurgical Society on Feb 7th 1908 He is still well at the time of writing these notes thirty years after his operation He has never had any further treatment for the melanoma and has never been irradiated In 1923 however I removed a small pigmented mole from the inner side of his left thigh No recurrence has taken place at or in the scar or in the glands.

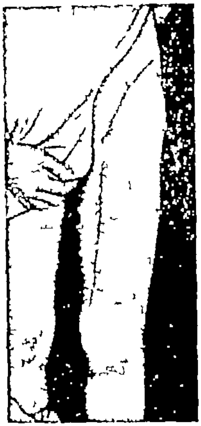

FIG 2 (Case 3) —Incision for successful removal of melanoma in lower part of left thigh

In my original paper I wrote: A radical extir pation of this disease will most certainly be ensured by excision of the tumour with a good zone of healthy skin around it and a somewhat larger zone of the underlying subcutaneous tissue and deep fascia along with a broad strip of subcutaneous fasciæ up to and including the nearest anatomical group of glands at least and all that is removed should be in one continuous strip The after history of these two patients—the only two on whom I have operated for melanoma—is good proof of the force of this contention

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A CASE OF STREPTOCOCCAL SEPTICÆMIA TREATED WITH PRONTOSIL

By G L Robinson M B Camb

On Jan 1st 1937 a very thin boy [illegible] years old was admitted to the Royal Victoria Hospital Netley with slight cough and a five day swelling at the angle of jaw (right) The right tonsil was enlarged and inflamed.

On admission the temperature was 101 F the pulse-rate 136 and the respirations 30 Three days later on Jan 4th the temperature was swinging between 101 and 104 there was pain and slight swelling of the left wrist and the leucocyte count was 23 200 (87 per cent polymorphs) Antistreptococcal serum (20 c cm.) was given On Jan 6th the neck was incised and a little deep pus was evacuated, one tube was left in for drainage A hæmolytic streptococcus was grown from the pus, and during the next day or two there were further rises of temperature to 104° with rigors No obvious pus was seen on the dressings Antiscarlatinal serum (10 c cm) was given on Jan 8th and again on the 9th, when the tube was removed and the wound packed with eusol gauze At this time there was pain and slight swelling of left ankle, and a culture was taken from the blood On Jan 11th 20 c cm of antiscarlatinal serum was given No valvular murmurs heard Rhonchi in lungs Breath sounds harsh Temp, 98–103° with rigors, pulse rate, 104–140, respirations, 35

From Jan 12th to 14th there was pain in both ankles, the respiration rate was rising (to 60), and signs of broncho pneumonia appeared in the lower lobes A final injection of 20 c cm antiscarlatinal serum was given on Jan 13th

On Jan 11th a hæmolytic streptococcus was found in the blood culture Administration of Prontosil (Red) began on the 12th, and 7 5 c cm was given each night and morning by intramuscular injection (total 100 c cm = 2 5 grammes) From the 12th to the 29th the patient also received one tablet of Prontosil Album by mouth every six hours (total 70 tablets=21 g) In view of his small weight these quantities amount to double the average dose used in puerperal cases by Colebrook and Kenny (*Lancet*, 1936, 2 1319) On Jan 15th radiography of the chest disclosed no pus The flow of pus from the neck wound was increasing and there was œdema of scrotum On the 20th a pleuropericardial rub was noted but the temperature was steadying between 100° and 101° Pulse rate, 130, respirations, 40 A blood culture taken on this day proved sterile On Jan 26th the temperature fell to 97°, and it continued thereafter along normal lines The pulse rate fell to 100, and the respirations to 24 Only a soft pulmonary systolic murmur could be heard, the heart being dilated Albuminuria slight or absent Gauze packing in neck wound daily soaked with pus Cough ceased, but still signs of bilateral pneumonia and of dry pleurisy (left) By Jan. 31st the child was out of danger, and he has since made a steady recovery

The dates and results of the blood cultures in relation to the prontosil treatment are suggestive of cure by this drug, but since there were no signs of a valve lesion it remains possible that recovery would have taken place without its aid

These notes are published by kind permission of Colonel G F Rudkin D S O officer commanding the Royal Victoria Hospital Netley, Hants

Netley Hampshire

SULPHÆMOGLOBINÆMIA FOLLOWING ANTISTREPTOCOCCAL CHEMOTHERAPY

By L D B Frost, M B Lond.

LATE HOUSE SURGEON ROYAL SALOP INFIRMARY SHREWSBURY

A girl aged 12 was admitted to the Royal Salop Infirmary on Jan 18th, 1937, with a history that four days previously she had been pricked by a penknife on the knee

She looked ill and was in much pain Her temperature was 101° F and her pulse rate 120 On the right knee there was a small scab lateral to the patella (? result of penknife injury) with swelling and redness medial to the patella The joint was tender and movements very, but not excruciatingly painful The liver and spleen were not palpable, and nothing abnormal was found in the urine

A diagnosis of suppurative arthritis was made and the joint accordingly opened A few drachms of seropurulent fluid were obtained (which on culture proved to be sterile) the joint was closed and a drainage tube inserted down to capsule Next day the temperature and pulse rate fell to normal, but there was still much pain in the joint It was decided to try Prontosil, and 5 c cm was given daily by injection for two days, with Proseptasine (p benzylaminobenzenesulphonamide) two tablets by mouth three times a day After the patient had had 10 c cm of prontosil and 12 tablets of proseptasine she was noticed to be cyanosed She was still in much pain but her temperature and pulse rate were not raised The urine on the previous evening had been pink in colour, but this was thought to be due to the excretion of prontosil in it, no further discoloration was noticed, and the bowels were well open with laxatives (magnesium sulphate was not given) The use of prontosil was discontinued, and oxygen was administered continuously with, however, no lasting effect The child died on the fourth day, the signs just before death being those of respiratory failure

Post mortem the striking points noticed were marked and early hypostases, darkness and fluidity of the blood, early fatty changes in the liver, and some staining of the intima of the first part of the aorta The lungs were normal and the heart revealed no congenital lesion The right knee joint contained about 3 drachms of frank pus in which many streptococci were demonstrated A spectroscopic examination of post-mortem blood showed the well marked absorption bands of sulphæmoglobin.

Colebrook and Kenny (1936a), in a series of 38 cases of puerperal infections treated with prontosil, records non fatal sulphæmoglobinæmia in three patient, in one of whom it developed after as little as 4 g had been taken They quote van den Bergh and Revers, who stated that, in a case of sulphæmoglobinæmia following the use of pyridium, the simultaneous administration of magnesium sulphate might have been a contributory factor Later Colebrook and Kenny (1936b) reported another series of 26 cases of puerperal infections treated with prontosil, in which there were no further instances of sulphæmoglobinæmia, incidently they withheld magnesium sulphate from these patients, the first series all having had it In the second series, also, they halved the dose of prontosil, in all but the very grave cases, but continued its use over a longer period

In the present case two possible causes of death spring to mind—namely, idiosyncrasy and overdose (A normal dose is an overdose to a “sensitive” patient) In Colebrook's series, as mentioned before, as little as 4 g caused sulphæmoglobinæmia, and this leads one to suppose that a small proportion of people have an idiosyncrasy to the drug—an idiosyncrasy that may even prove fatal In view of the recommended dosage I do not think an overdose, in the ordinary sense of the word, was given in the case I am recording

I am indebted to Mr A Simpson, under whose care the patient was admitted, for permission to publish this case

REFERENCES

Colebrook L, Kenny, M and others (1936a) *Lancet* 1 1279
— — (1936b) *Ibid* 2 1319

Donations for the Belfast Hospitals—A gift of £100,000 is to be distributed among Belfast hospitals and charitable institutions by Sir George Clark and Captain H D Clark, who are commemorating their parents, the late Sir George and Lady Frances Clark, in this way The Royal Victoria Hospital and the Children's Hospital will each receive £15,000

Victoria Infirmary, Glasgow—A steady increase in the work done at the Victoria Infirmary is described in the annual report The cost of maintenance is now over £85,000 per annum, and during the past year £6000 had to be drawn from capital During the year 1151 patients were treated in the paying patients' wing, and the governors are satisfied that this department is fulfilling a very useful purpose without being a burden on the general income

MEDICAL SOCIETIES

MEDICAL SOCIETY OF LONDON

AT a meeting of this society on Feb 22nd with Sir WILLIAM WILLCOX, the president in the chair a discussion took place on the

Ætiology and Diagnosis of Jaundice

Dr C E LAKIN introducing the subject spoke first of blackwater fever and described a fatal case In this disease hæmoglobin was liberated from the corpuscles so rapidly that the cells of the reticulo endothelial system were completely overwhelmed hæmoglobin appearing in the urine and the skin becoming deeply pigmented. This hæmolytic pigmentation sometimes followed the transfusion of incompatible blood if death was delayed a few days There was no sharp line of demarcation between the hæmolytic pigmentation of these conditions and that of so called hæmolytic jaundice, with excess of pre hepatic bilirubin Other examples were in pernicious anæmia acholuric jaundice malaria oroya fever poisoning by potassium chlorate sulphonal, or certain snake poisons and in some cases of septicæmia when it rendered the prognosis still more grave The next group was that of toxic or hepatogenous jaundice, with a retrograde change in the parenchymatous cells of the liver which could no longer transmit the usual hæmolytic products to the bile capillaries Except in acute yellow atrophy and the graver cases the changes in the skin and in the colour of the stools were only slight There was usually some enlargement of the spleen With widespread destruction the whole function of the liver was seriously affected and pyrexia persistent vomiting petechial and other hæmorrhages, delirium and coma often preceded death In the obstructive jaundice group the digestion and absorption of fat was so defective that the total fat might form 50 per cent. of the stools Constipation was the rule but there was sometimes diarrhœa, ascribed to fermentative changes The slow pulse often seen was attributed to the toxic action of bile salts on the sino auricular node.

In the differential diagnosis of jaundice a sudden onset in the healthy suggested obstruction of the common bile duct by a gall stone whereas a slow onset of increasing jaundice was associated with a new growth or pressure on the duct from without Jaundice immediately after attacks of violent paroxysmal pain usually meant the passage of a gall-stone along the cystic duct into the common bile duct A painless onset preceded by evidences of gastroduodenal catarrh suggested in a young adult catarrhal jaundice An initial loss of weight was seen in pancreatic disease and in malignant disease of the alimentary tract The occupation might afford a clue as in the use of such substances as carbon tetrachloride and trinitrotoluene Certain drugs might produce the symptom such as Atophan and Salvarsan In the general clinical examination attention should be paid to nutrition and the tonal condition of the abdominal wall. If the liver was passively congested or if there was hepatitis it would be tender on palpation Attention should be paid to the gall bladder the epigastrium the spleen the supraclavicular fossa for enlarged lymphatic glands, and the lung especially the right base In late stages of cirrhosis of the liver the first sound of the heart was noticeably defective in tone and the rhythm was often tic tac. A rectal examination should never be omitted in a doubtful case The urine was tested for bile pigment and bilirubin would be detected either by the iodine or the nitric acid tests Obstructive jaundice was characterised by putty like stools bile pigment and probably bile salts in the urine, and the jaundice was more likely to be intense than in the hæmolytic or toxic groups The blood gave an immediate direct van den Bergh reaction In the hæmolytic group the urine would not contain bile but urobilin was likely to be present sometimes in considerable amount The stools might be darker than normal Cases needed a complete blood count fragility tests and a determination of the mean corpuscular volume, a count of reticulocytes and blood platelets and the Wassermann test. In the toxic form the patient was often seriously ill and often feverish though the jaundice was not necessarily intense. Small quantities of bile might be found in the urine in addition to bilirubin In severe cases albumin and casts were always present because of the accompanying kidney damage

LABORATORY TESTS

Dr GEOFFREY HARRISON dealt with laboratory tests in jaundice Van den Bergh's method was accepted as the standard procedure for detecting bilirubin in the blood its main chemical value was to show hyperbilirubinæmia when the patient had a slight yellow tint and the condition could be detected before the onset of actual jaundice In established jaundice it showed the progressive changes in the concentration of the pigment in serum Estimations of bilirubin in the blood were as valuable in diseases of liver and biliary passages as those of blood urea in renal disease. Though direct van den Bergh reactions indicated mechanical obstruction he thought the test could not be properly interpreted until more was known of the physical chemistry of bilirubin and of the reaction He would like to cease reporting the direct test until that knowledge was available; he suggested that there was only one type of bilirubin though variations in other factors made it appear that there were two The usual chemical tests, such as the nitric acid and iodine ring tests were not sensitive enough A much better reaction which was very useful in clinical work was an application of Fouchet's test to a barium precipitate from urine It did not give positive reactions in health nor with pigments other than bilirubin The diazo test could also be applied to this precipitate and was also a sensitive method

Dealing next with stercobilin in fæces, Dr Harrison said that bilirubin was present in meconium, but after infancy except in gross diarrhœa it was said never to appear in the fæces Hence the stools should be tested for stercobilin and the colourless stercobilinogen not for bilirubin Describing the galactose test, he said that about 40 grammes of galactose was the maximum oral dose with which a liver whose cells were not damaged could deal and this dose seemed to be independent of sex age and body weight After this amount in health the peripheral capillary blood-sugar usually rose as much as after the same dose as glucose but this rise was presumably due mainly to glucose formed from liver glycogen not to galactose It was the amount of sugar in the urine which mattered blood sugar level and blood-sugar curves were of no assistance Phosphatases were enzymes which hydrolysed phosphate-esters to liberate inorganic phosphate and were widely distributed in tissues the greatest concentrations occurring in bone, kidney, intestinal mucosa, liver, and red cells Traces were present also in plasma or serum in health The plasma phosphatase was increased in active bone diseases and in obstructive jaundice, but an estimation was of only limited value in separating the obstructive group from the other types

TOXICOLOGY

The PRESIDENT said that the liver damage due to the use of "dope" in aeroplane work at the beginning of the late war was caused by tetrachlorethane It had been found that practically all the factory staff were slightly yellow, that they had morning vomiting, and some had ascites He had also seen during the war some fatal cases of trinitrotoluene and of atophan poisoning Many cases of toxic jaundice had occurred after using some of the new drugs, such as Luminal, and he had seen it follow the use of Plasmoquine, acriflavine, and Avertin Trichlorethane, largely used in dry cleaning, also produced jaundice, and atrophy of the liver sometimes followed the giving of carbon tetrachloride One of the main functions of the liver was the toxiphylactic, it protected the body by removing poisons from it, including those produced in internal metabolism In toxic jaundice the key to the situation was the liver cell Nature had been generous in that she provided fourteen times as many as were needed for ordinary requirements, hence the ability of some people to stand such large doses of alcohol as they were known to take Chloroform was a very rapid liver poison, and in phosphorus poisoning all the liver cells became swollen and were the subjects of fatty degeneration, they necrosed, the liver then shrank, and while this was proceeding the kidney cells became damaged, and acute yellow atrophy supervened Thus it was all one picture, it was a question of time and the intensity of the poison Dr Lakin had said that in toxic jaundice it was rare to see pale stools This was because of the swelling when the tension was increased and the bile ducts blocked by squeezing, but he had seen pale stools lasting three or four weeks in toxic jaundice The depth of the jaundice was not much guide as a means of differentiating the toxic from the obstructive type, but he considered that the van den Bergh reaction was good for the diagnosis of hæmolytic jaundice He agreed with Dr Harrison's remarks concerning the liver function tests The liver varied greatly in susceptibility to poisons, and old people were much more susceptible to them than were younger folk, especially with such drugs as atophan and the barbiturates

TROPICAL DISEASES

Dr P H MANSON BAHR said that the discovery of the cause of blackwater fever would shed more light on paroxysmal hæmoglobinuria and acholuric jaundice than any other means In blackwater fever the giving of quinine had much to do with the onset of the paroxysms, but since the advent of Atebrin, which killed the sub tertian parasite, it had practically ceased to exist in this country, though in London 10–20 cases yearly were once seen One of the means of curing the disease was by giving large quantities of fluid, one of his severe cases became maniacal, and managed to procure and drink a large quantity of beer, after that he began to recover The speaker was the first to point out ten years ago, the similarity of the renal condition in blackwater fever to that in incompatible blood transfusion, and it had been many times confirmed since Plasmoquine might cause methæmoglobinuria, and carbon tetrachloride might cause toxic jaundice, just as chloroform did, but it would be wrong to ban these valuable drugs on that account Dr Lakin had mentioned amœbic hepatitis and amœbic dysentery as causes of jaundice, but he himself had always held that amœbic abscess of the liver was not associated with the symptom jaundice Carotinæmia caused a great discoloration of the skin, and was very rife among residents in Nigeria, possibly because a large part of the diet there was fresh vegetables

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SOCIETY OF MEDICAL OFFICERS OF HEALTH

AT a meeting of the Maternal and Child Welfare Group of this society held on Feb 19th, Dr AGNES NICOLL, the president, being in the chair, Dr PETER MCKINLAY read a paper on the

Economics of Child Welfare Work

He said that his subject really involved an attempt to equate child welfare activities with the improving health of the population at the ages concerned Before any assessment of expenditure and return could be made, it was essential to find where and to what extent child welfare activities had been operative

He proposed, therefore, to summarise the changes shown by vital statistics for the ages concerned and to discuss the effects of some of the relevant factors Both in Scotland and in England and Wales the infant mortality rate had shown no tendency to improve until the end of the last century, but since then had dropped from 150 to about 60 in England and Wales and in Scotland much less, from 120 to about 80 The differences in rates of improvement in the infant death rate from various causes and in different areas could hardly be studied before 1911 and so he had taken out figures relating to the five quinquennial periods since then Comparing the first and last of these periods the rate was found to have declined for all causes by 43 per cent, that due to convulsions falling most, congenital debility, tuberculosis, syphilis, diarrhœa, measles, and overlaying following next on the list in that order Deaths from premature birth showed negligible improvement, congenital malformations were half as much again as in pre war days and the mortality attributed to birth injury was exactly doubled The decline had been more noticeable among illegitimate than legitimate children, and only in respect of diarrhœa did this not hold true The contrast was greatest for birth injury which had not increased in illegitimates the rate for malformations had increased among them by 31 per cent against an average of 53 per cent The actual rates of mortality in Scotland for each of the principal causes were at present much higher than the corresponding rates for England and Wales

The death rate of children aged 1–5 years had shown an entirely different and much more satisfactory course than had infant mortality Improvement could be traced back to 1870 and by the end of the century the rate had declined by 40 per cent. of the level in 1861 Even in the present century considerable improvement had been shown, the rate of decline being relatively greater than in infancy The nearer to infancy the less the improvement, but except for 0–1 years the date of appearance of decline at individual years was roughly the same

SUGGESTED EXPLANATIONS OF THE IMPROVEMENT

As the similarities shown by the improvement were as impressive as the differences when area time, or condition was considered some people had been led to look for some general changes to explain the improvement. The first of these was birth rate several studies had shown a high correlation between birth rate and infant mortality From his own work Dr McKinlay had concluded that the causes which had declined most were those dependent largely on maternal care and, while recognising that improved maternal care could be attributed to child welfare activities he was more inclined to think it resulted from the smaller size of families If the declining birth rate were responsible why did the infant mortality rate not decline before 1900 when the birth rate had declined quite a lot? He did not wish to prove any case but one explanation was that the decline in birth rate had affected the social class which had least effect on infant mortality rate Kermack McKendrick, and McKinlay had concluded from an investigation that the most important factor in the health of an individual during his whole life was his environment up to the end of school life The infant mortality and pre school death rates did not fit in here but might be explained by the dependence of the child s welfare before birth during its first year and to a decreasing extent later on the health of the mother: the mothers of 1901 were born in 1870 or a little later when the death rates of childhood began to fall. Another explanation of the comparative lag was that compulsory education was introduced at a time which would have affected the 1901 mothers there could be no doubt that intelligent motherhood appreciably affected the risks to a child s health The operative factors causing differences in the trend of individual causes of death were very hard to dissociate for instance the decline in infant death rates from diarrhœa might be attributable to child welfare work, but the influence of improved general sanitation and diminished fly prevalence could not be ignored The falling infant mortality had been claimed as a measure of child welfare work The speaker felt that the latter could not be evaluated on the basis of mortality rates and without more extensive knowledge of non fatal intercurrent sickness and defect Uniform methods of assessing deviation from health were needed and called for planned research

DISCUSSION

Dr F Nash welcomed the healthy doubt that the child welfare workers had caused the decline in child mortality

Dr M Radford said there was a tendency to extend social services involving large expenditure of money and time he wondered whether real wages per member of a family could be correlated with the declining death rate If that were so public policy should be directed to altering the purchasing power rather than to delivering goods to the doorstep

Dr M. L Gilchrist asked if the high mortality figures for the central West areas of Scotland could be correlated with the figures for the depressed areas

Dr A Freeman hoped Dr McKinlay would give his views on future trends He would be interested to know if there were any correlation between the introduction of dried milk and the lowered death rate He estimated that if expenditure on infant welfare was the same over Great Britain as in his area the total must be of the order of 3 million pounds

Dr M. Emslie said that in 1928 1¼ million pounds were spent on infant welfare work and half that sum went in buying foods She wondered whether the decline in pre-school mortality could be correlated with the decline in infectious diseases and the coming of hospital treatment

Dr Nora Wattie felt that child welfare clinics were unlikely to have as much effect as improved housing She thought the climate of Scotland must be partly to blame for the mortality there.

Dr E Cassie thought the speaker had taken a pessimistic view; the welfare service had altered the status of the child.

Dr Stella Churchill asked if Dr McKinlay could offer any explanation of the increased incidence of malformation.

The President said that so many deaths due to diarrhœa followed illnesses starting as a cold that respiratory infection was one of the foremost problems The increase in recorded defect might, she thought, be due to change in standards

Dr McKinlay in reply said he had not meant to be derogatory to child welfare but he considered its effects could not easily be assessed from mortality and morbidity rates He wondered to what extent congenital defects and bronchitis and pneumonia could be reduced by visiting guidance and the giving of dried milk. As unemployment relief took size of family into account and wages did not the difference between distressed and other areas was not very great He thought death rates would continue to decline. The claims put forward on behalf of infant welfare achievements were very like those made by those urging better nutrition and better housing

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ROYAL SOCIETY OF MEDICINE

SECTION OF MEDICINE

At a meeting of this section held on Feb 23rd the chair was taken by Sir Charlton Briscoe the president and Dr W G Savage opened a discussion on

Milk as a Factor in the Cause of Disease

He reminded his hearers that as long ago as 1857 an outbreak of typhoid fever had been traced to milk Nowadays the significance of milk as a vehicle of infection was obvious since there were three contributory factors the liability of the cow to diseases transmissible to man the suitability of milk as a culture medium and the large amount of handling between cow and consumer which enabled human disease to be conveyed by the milk. The first group to be considered was the human infection associated with infection of the cow Human tuberculosis of bovine origin could be fairly accurately estimated by bacteriological investigation as infection through tuberculous meat was negligible Dr Savage then estimated the death rate from the Registrar General s figures In 1931 there had been 303 respiratory deaths under five years of age none of them being counted as due to bovine infection Of the 1280 nervous cases 34 per cent and of abdominal tuberculosis 80 per cent of fatal cases in that year were bovine in origin The calculated total was 1731 deaths from bovine tuberculosis This was probably an under estimate The pulmonary tuberculosis of bovine origin was probably higher than the chosen figure of 6 per cent under five and 1 per cent over five; indeed figures of 12·6 per cent had been recorded in local investigations To take 2 per cent instead of 1 per cent would add 300 deaths to the total, making about 2000 in the year 1931 About 4000 fresh cases developed each year, and a vast amount of suffering and expense was caused, quite apart from the death rate On an average, 40 per cent of milch cows were infected, though there were wide local variations About 0 2 per cent of all cows had infected udders and excreted bacilli in large quantities Some 6–8 per cent of all raw milk was infected. The cow was thus an important cause of human tuberculosis Contagious abortion was prevalent among cattle, some 20 per cent showing antibodies in their blood Raw milk samples showed an 8–10 per cent infection, and high class milks were no less liable than "dirty" milks Undulant fever in man was not common, but seemed to be increasing In 1933 over 130 cases had been recorded, with 4 deaths Probably 500 cases occurred annually in England and Wales, according to the calculation of Prof G S Wilson Even so, there was a discrepancy between the human disease and the opportunity afforded by milk. Many farm workers showed latent infection This comparative insusceptibility was not associated with isolation, for the bacillus proved to be always of the bovine type

Streptococcal mastitis in the cow was very common, but consequent sore throat in man was very rare, the usual bovine organism was not pathogenic to man, yet in a few cases mastitis seemed to be infective, probably as a result of udder infection with organisms of human origin It was not easy to infect an udder with a human streptococcus An extensive outbreak in Hove and Brighton in 1929 had been regarded as a new disease, though it was entirely similar to many smaller outbreaks in the early part of the century In the interval few anginal epidemics had been recorded in this country, but a number in America The outbreaks might be very widespread A few scarlatinal epidemics were due to udder disease, and not to the more usual human contamination A few diphtheria outbreaks were also associated with diphtheritic ulceration of the udder Probably udder infection always caused large angina epidemics and not small ones Clinical food poisoning might be traceable to salmonella infection in cows, Dr Savage had records of twenty outbreaks, affecting from one to five hundred persons each The mortality-rate was low, though the disease might be severe Other infections of the cow transmissible to man included anthrax and foot and mouth disease The former was so fatal to the cow that there was little risk to man from the milk. Very few cases of the latter had been recorded in this country, but several in Germany

HUMAN CONTAMINATION

The important diseases spread by human infection of milk were diphtheria, scarlet fever, typhoid fever, paratyphoid fever, dysentery, and occasionally angina The literature, especially annual reports, was full of recorded outbreaks, but it was most difficult to estimate the risk. There were no accurate records The Committee on Cattle Diseases, 1934, gave a list of outbreaks known to the Ministry of Health but admitted its inadequacy It included 14 epidemics of dysentery, 28 of scarlet fever, and 30 of typhoid. In America outbreaks were more systematically recorded or else were more numerous The 1936 outbreak of enteric in Bournemouth and Poole illustrated the wide extent and danger of these outbreaks The Herts paratyphoid outbreak of 1928 and the 1919 Aberdeen outbreak of dysentery were also worth mention In 1920 there had been a diphtheria outbreak at Glastonbury which had never been recorded A milker had contracted the disease and returned from hospital after three negative swabs His younger brother had been allowed to work after one negative throat swab and the result had been 58 direct and 51 indirect cases with 17 deaths There was overwhelming evidence that milk was an important source of disease The milk borne tuberculosis was a national disgrace, since the means of prevention was known Elimination of the use of raw milk would go far to prevent the other milk borne diseases

THE VETERINARY ASPECT

Mr F C MINETT, D Sc, recalled a discussion in 1931 on milk borne streptococcal epidemics and said he would give a "progress report" since that date *Brucella abortus* infection had been studied at the Royal Veterinary College The problem was not simple The incidence depended on a number of factors—e g, the amount of milk tested, the number of guinea-pigs tested, and the technique used These difficulties had been described by E J Pullinger in THE LANCET (1934, 1, 967) Rail tank milks were always infected with tubercle In one investigation 53 out of 63 had been found to be infected with *Br abortus* In another, some 70 per cent of herd samples of clean milks showed infection with *Br abortus* Among ordinary milks 39 per cent of Cheshire milks and 20 per cent of Somerset milks showed this infection. The only explanation of the higher percentage in clean milks seemed to be that it was easier to isolate the organism from clean milk than from dirty, actually the presence of the tubercle bacillus was the complicating factor, as it caused in a guinea pig a state of resistance to the *Br abortus*, so that the brucella could not be isolated. Streptococcal milk borne infections probably arose, as Dr Savage had suggested, from human infections of the udder Streptococcal mastitis was very common and might be due to weakly hæmolytic or actively hæmolytic organisms The former type had no epidemiological significance, as the coccus could not infect man The latter group deserved further consideration Of 82 cases of mastitis examined, 50 were due to the weakly hæmolytic and 13 to highly active hæmolytic streptococci. The cases were not associated with any human disease, so far as was known Since 1931 Dr P R Edwards of Kentucky had shown that the active organisms comprised two subgroups, only one of which caused human disease, being of human origin The two subgroups could be bacteriologically distinguished.

All the evidence pointed to the fact that infection of the milk was via the cow in almost all cases The evidence for indirect contamination was epidemiological, cultural, and concerned with the cow The epidemiological evidence did not explain widespread and persistent epidemics, it seemed unlikely that one man on a farm could cause 500 cases of disease, unless, at least, the organisms grew in the milk. The growth of streptococci in milk at ordinary temperatures had been investigated again It depended on the type of milk, the strain of organism, the numbers put in the temperature and other factors, so that the question was complex Nevertheless, it had been shown that *S pyogenes* would grow slowly in sterilised milk at high temperatures (18°–22° C) but would not grow to any significant extent in raw and pasteurised milk. This was true of three different strains, one of them a human streptococcus direct from the cow It was not easy to find the cow which was the source of an epidemic but human type streptococci had been isolated from cows at times of epidemic The recent Doncaster outbreak of scarlet fever had involved 186 people with 3 deaths and a cow had been found infected with scarlet fever streptococci and kept under observation. Most of the cases started on Dec. 10th 11th and 12th. On Dec 15th the Type II organism had been identified in swabs and next day the same organism had been found in a cow On Dec 24th the samples of milk from the two front quarters of the cow had shown the streptococcus No other cow in the herd showed this organism On Jan 5th the cow had been transferred to the laboratory byre She had repeatedly yielded Type II organisms from the left front quarter during January This was the first time such a cow had been obtained for observation The two front quarters were shrivelled and practically destroyed while the hind quarters were normal. On Dec. 15th the veterinary surgeon had examined the herd and this cow had been normal only on Dec 20th did she show actual mastitis Even on Dec 24th the left fore quarter was described as normal, though the organisms were found in the milk. She showed no sign of malaise or ill health

DISCUSSION

Dr W McD SCOTT drew attention to the group of diseases normally affecting man transmitted to the cow and returned to man in the milk. Enteric might prove to be a rare bovine disease of this type. Droplet infection or hand contamination could hardly explain the large outbreaks traced to one milk supply A recent outbreak had been associated with no human carrier though a secondary case had occurred on the farm. It had been found however that the cows were drinking from a stream polluted with a sewage outflow heavily contaminated with typhoid. Contamination of the milk from the cow's skin or fæces did not seem adequate to account for the widespread contamination of the milk unless the *typhoid bacilli multiplied in the cow's alimentary* canal This practically amounted to typhoid fever in the cows Unfortunately it had been too late to prove the point in this instance

Dr C O HAWTHORNE was impressed by the seriousness of the indictment against milk and doubted if there were any other subject on which there was more decided or unanimous opinion It was strange that men failed to protect themselves One reason might be the delay between infection and manifestation of the disease Public opinion was not thoroughly informed on this subject and the conclusions arrived at by research workers were challenged in the press A recent writer to the *Times* had suggested that only 500 cases of bovine tuberculosis occurred annually Moreover a large commercial interest was involved in the production and sale of milk. Commercial standards of ethics perhaps did not conform to those of scientific and medical men. An advertisement quoted from an official pamphlet statements on the food value of milk but stopped short of the subsequent warning of its dangers About a third of a million of children were receiving raw milk as part of the school ration. The process of popular education must be continued and experts must not remain in academic seclusion but must come down into the arena of the press and show their scientific basis for believing that pure clean milk might be unsafe if not treated by some heat process

Dr TOM HARE suggested that a sense of proportion was essential to medical men and veterinary scientists Exaggeration would not be to the interests of the country or any section of it The uninitiated mind was apt to jump to the conclusion that the cow was responsible for bovine tuberculosis in human beings, whereas there were many sources Bovine tuberculosis was found in the dog and the parrot which had a closer relationship to the human family than the cow Tuberculosis in dairy cattle had been greatly reduced. Was the aim to be the production of a raw healthy milk or a bacteriologically safe treated milk? The leaders of agriculture were not doing a disservice to the country when they emphasised the importance of the consumption of healthy raw milk.

Mr STEELE BODGER *questioned* whether raw milk was as dangerous as had been suggested and thought the milk borne epidemic theory was being overdone. Pasteurisation was attacking the disease problem *from the wrong end and giving a false* sense of security A safe raw milk could be produced for anyone who cared to pay for it No process was more likely to produce slovenly milk than the knowledge that it would be pasteurised for that reason the dirtiest milk in the Midlands was sent to London

Dr J F BROCK emphasised the importance of understanding milk borne diseases and using that knowledge for the benefit of the public. Sometimes the duty of educating the public was forgotten in the desire not to be propagandists Was dissemination of disease to continue until the milk supply could be wholly purified? There must be a short-term policy for the meantime The medical profession did not realise the amount of propaganda against pasteurisation Nor was pasteurisation always adequately done.

Dr RICHARD HAMBURGER said that the medical profession and the consumers in Germany had decided not to use any milk but boiled milk and that there was no difference in the feeding results He could not understand the British idea of the superiority of raw milk. Butter could be substituted for milk in the first two years when the results of bovine tuberculosis were so disastrous and vitamins could always be added.

Dr E G WHITE pointed out that in Germany precautions were taken to ensure cleanliness of the milk before it was boiled In this country medical experts could not express their views in letters to the press because small extracts were published and might give quite the wrong impression Toronto had a very low tuberculosis rate but a very high death rate among children

Dr R. P WILLIAMS spoke of an epidemic of scarlet fever in a sanatorium involving 150 children which could have been obviated by pasteurisation The dairy was attached to the sanatorium and was perfect but one of the dairymen had infected the milk. In another case an apparently normal cow had yielded tuberculous milk and a child had been infected.

Mr BODGER spoke of the Montreal typhoid outbreak due *to pasteurised* milk.

Dr SAVAGE replied maintaining that all alternative sources of bovine tuberculosis had been thoroughly explored and denied any *reduction in* tuberculosis of cows. The Montreal epidemic had not been conveyed by pasteurised milk; the milk in question had not gone through the pasteurising plant.

REVIEWS AND NOTICES OF BOOKS

1 Diseases of Infancy and Childhood

By WILFRID SHELDON, M D, F R C P Lond, Physician for Diseases of Children, King's College Hospital, Physician to Out patients, Hospital for Sick Children, Great Ormond street, Consulting Pædiatrician to the London County Council London J and A Churchill Ltd 1936 Pp 738 *21s*

2 A Handbook on Diseases of Children

Second edition By BRUCE WILLIAMSON, M D Edin, M R C P Lond, Physician to the Royal Northern Hospital, London, Assistant Physician to the Prince of Wales Hospital, London Edinburgh E and S Livingstone 1936 Pp 329 *10s 6d*

1 Now that pædiatrics has received the official benediction of the Royal College of Physicians, in the form of a diploma, one may hope for an increased demand for books on the subject There is likely to be a wider public especially for books supplying a reliable survey of children's diseases in reasonably small compass Dr Sheldon and his publishers have been singularly successful in this new venture The book has none of the signs of prematurity, and indeed the author admits to a period of gestation of over nine years The infant is of pleasing form, and the presentation satisfactory, it is clearly begotten of clinical experience Dr Sheldon has in general followed the conventional plan of discussing the diseases of the various systems seriatim, which makes the book easy of reference and useful in providing an equipment with which to defeat examiners It is naturally less helpful to those who are primarily concerned with the interpretation and significance of symptoms Treatment, however, is considered as fully as is practicable in a book of this size, and if there are signs of a lingering affection for lengthy formulæ, more modern methods have a prominent place The 137 illustrations are, with the possible exception of some of the radiograms, exceptionally good, and add greatly to the interest of the text Dr Sheldon has not hesitated to include rarities, but he is not likely to be accused of any false sense of proportion The book as a whole deserves wide popularity, particularly amongst undergraduate students It is launched in true nautical manner by Prof Still

2 Dr Bruce Williamson's book is smaller and cheaper Whilst it contains little which can justly be criticised, it appears slightly to have reduced a minimum, irreducible except by the expedient of making the subject seem simpler than it really is It has clearly been found of value, and indeed it should serve a useful purpose as a *first* introduction to the subject of children's diseases for students doing their adult medical clerking It would be regrettable if it were looked on as a textbook which in fact it does not claim to be It is attractively bound and illustrated, and of convenient size for the pocket

A System of Clinical Medicine

Tenth edition By T D SAVILL, M D, edited by AGNES SAVILL, M D, and E C WARNER, M D, F R C P London Edward Arnold and Co 1936 Pp 1061 *28s*

IN this well known work symptoms rather than disease entities are the primary material for discussion. After a description of the individual symptom, the common causes are enumerated and elaborated, the symptoms being taken not in alphabetical order but arranged in chapters on the different systems of the body In this edition all sections have been thoroughly revised and much new matter has been introduced, though the size of the volume remains unchanged. The editors have again had the assistance of seventeen collaborators, each of whom is responsible for the revision of the section of the book dealing with his special province, and an expert standard is thus maintained throughout The special features of arrangement and the authoritative material which have made this book popular among generations of students and practitioners are fully maintained in this edition

Medical Diagnosis

Some Clinical Aspects By S LEVY SIMPSON, M A, M.D Camb, M R C P Lond, Physician to the Willesden General Hospital, Assistant Physician, Princess Louise Kensington Hospital for Children London H K Lewis and Co, Ltd General Practice Series 1937 Pp 244 *10s 6d*

TAKE the classified list of diseases from a textbook of medicine, omit the uncommon ones, and add a few common surgical and gynæcological conditions Then under each heading write a succinct little paragraph indicating the nature of the disease, outlining its symptomatology, and mentioning a few points and pitfalls in differential diagnosis Keep laboratory aids in the background but show where their help becomes important Such is Dr Levy Simpson's recipe He has compounded his book very neatly and shrewdly, with a good eye for the clinical essentials, as becomes a pupil of Dr Robert Hutchison The busy practitioner, whose minutes for reading are few, will find it both light and profitable

Bright's Disease and Arterial Hypertension

By WILLARD J STONE, B Sc, M D, F A C P, Clinical Professor of Medicine, School of Medicine, University of Southern California, Los Angeles London W B Saunders Co Ltd 1936 Pp 352 *22s 6d*

Prof Stone has tried to supply the clinician with a concise description of the main features of Bright's disease—no easy task. In carrying it out he refers to many of the better known recent publications and is clearly up to date in his reading His classification is a compromise with obvious *affinities to that of* Addis, thus he divides acute Bright's disease into hæmorrhagic and degenerative types, the former passing by recognisable stages to chronic Bright's disease, with secondary hypertension (or secondary contracted kidney) Under the heading of chronic Bright's disease he also describes the arterio sclerotic kidney with primary hypertension, subdividing this into the latent (or benign) and active (or malignant) types In this classification the influence of the German school is apparent, but many will disagree with the close association of these so called benign and malignant types of hypertension After a series of short chapters on various biochemical aspects of the disease the various types of nephritis are separately described with advice on treatment in which diets are given a prominent place The dietetic ingredients will not always be easily interpreted by those English readers who are unacquainted with the precise nature of Jell O graham crackers and other transatlantic products The work is in general sound and conforms to the more advanced lines of teaching but is often marred by vague statements For instance p 159 Ether anæsthesia has been believed to irritate the glomerular structure of the kidneys and is less frequently used to-day for operative procedures in the presence of infection in children than a decade ago Such comment is worthless unless backed by references and only serves to harass the clinician over his choice of anæsthetic. The author's description (p 121) of a simple and sensitive test for red blood cells in urinary deposits which will enable the detection of amounts down to 1300 per c cm of urine deserves the attention of pathologists in view of the great clinical importance of this finding

Post mortem Appearances

Third edition. By JOAN M. ROSS M.D B S Lond M.R C.S L R C P Reader in Pathology University of London; Morbid Anatomist to the Royal Free Hospital; late Assistant Pathologist to St Mary's Hospital. London Humphrey Milford Oxford University Press. 1037 Pp 243 7s 6d

THIS little book has now established itself as a student's guide Its special feature is the description of typical cases as they appear in the post-mortem room Most of the larger text-books of pathology deal with the changes in the different organs separately leaving the student to learn from practical experience how these changes may be related Dr Ross describes briefly the chief anatomical changes to be expected in a person dying from any of the commoner diseases and thus enables the student to judge how far the cases he sees at autopsy conform to type

The chief alteration made in preparing this new edition is in the section on renal disease which has been entirely rewritten The problem of the classification of nephritis has been tackled in an effective way by preserving the utmost simplicity and by omitting the less important types A useful section of the book is that dealing with death from causes other than disease here the characteristic features of cases of poisoning are briefly but clearly described. Appendices are included with tables of the normal average weights and measurements of the organs The book is excellently adapted to its purpose and its arrangement and indexing make for quick and easy reference

Bailey's Textbook of Histology

Ninth edition By ELWYN and STRONG Revised and rewritten by the Anatomical Staff of the College of Physicians and Surgeons Columbia University London Baillière, Tindall and Cox 1036 Pp 773 27s

THIS revision of the text-book by Adolf Elwyn and Oliver Strong has been undertaken by five members of the anatomy department of Columbia University They have made alterations in nearly all parts, rewriting the four chapters on the cell the blood and lymph muscle and the organs of special sense and replacing some of the old figures by new ones. The system adopted is to explain structure as far as possible in relation to function Much physiological matter is therefore included along with discussions on modern researches An interesting chapter is that on the living cell which describes amongst other things methods of tissue culture; and throughout the book there are frequent references to the study of tissues in the living state. The result is a somewhat lengthy work—perhaps more than the average medical student will be inclined to tackle at first sight—but the reader will soon find compensation for extra bulk in an easy and readable style Since the text-book is intended for students and not as a work of reference no bibliography is included. Information on technique is confined to general terms and no details are given on staining methods. The subject matter is well balanced, and due consideration is given to the bearing of histological problems on those of physiology and medicine. Thus the work forms a good coördinating link in the medical curriculum and in this respect especially it can be recommended to medical students

A Textbook of Bacteriology and its Applications

By CURTIS M. HILLIARD Professor of Biology and Health Simmons College Revised edition Boston Ginn and Co Pp 330 12s 6d

BACTERIOLOGY though it contains so much of general interest is not easy to present in a popular form. This, however is no reason why sincere efforts to this end should be discouraged Prof Hilliard's little book certainly falls into the category of the sincere Except that it does not cater for the needs of any special technical group of bacteriologists it is perhaps hardly fair to call it a popular work The information provided appears to be reliable and is set out in a scholarly way One of the chapters contains a very full synopsis of the classification of bacteria according to Bergey the professional bacteriologist will pity the reader say a dairymaid, a health visitor or an improver in a canning factory who struggles with detail upon which the average expert would not welcome examination One of the best chapters is that on refrigeration and canning Here we read of a consignment of eggs put aside during two years litigation and subsequently sold as entirely sound and safe food material with other interesting matter with which English readers are likely to be unfamiliar A few of the recurring solecisms of text books are allowed to creep in for example Hofmann and Ziehl Neelsen are misspelt and there is some muddle in the description of the unit of diphtheria antitoxin To those who want a conspectus of general rather than medical bacteriology and who are not afraid to assimilate their knowledge in a concentrated form this little book may be recommended

Recent Advances in Allergy

Third edition. By GEORGE W BRAY M.B Ch.M. Sydney M.R C P Lond. Physician in Charge of Children's Department Prince of Wales Hospital; Assistant Physician Princess Elizabeth of York Hospital for Children Consulting Allergist, Children's Hospital Hampstead. London: J and A Churchill Ltd. 1037 Pp 517 15s

IN the days before allergy asthma and urticaria were regarded as neuroses and fell largely in the province of the neurologist There are suggestions that the allergic hypothesis is losing much of its momentum—it has reached the dangerous age of specialised *practitioners* journals and societies—and with the swing of the pendulum the asthmatic is returning for help to the psychologist. One of the most interesting chapters in this third edition of Dr Bray's book deals with the nervous or psychic factor Psychologists and allergists at present adopt towards each other a sceptical or frankly hostile attitude, and until they exchange tactics of catch-as-catch-can for give and take the results will be more amusing than instructive As it is computed that 30 per cent of the population is psychoneurotic and 25 per cent is allergic, they must have a good deal of ground in common In allergy proper the most striking advances appear to have been the recognition of the frequency with which moulds and fungi are responsible for allergic symptoms and the study of drug sensitivity, of which two of the most striking manifestations are purpura hæmorrhagica and agranulocytosis It is difficult sometimes to avoid the feeling that allergists collect allergens as other men collect postage stamps and old china, and until we solve the central problem of the interplay of the soil and the seed, of the nervous system or constitution and the foreign protein, in these curious manifestations of spasm and exudation, allergy will belong to the art of romantic detection rather than the science of therapeutics

This contribution to the "Recent Advances" series now contains more than 500 pages, and has really developed into a text book on allergy Considered as such it is a very able production, but much of the material presented is neither recent nor advantageous, and the book, like some others in the series, would benefit from rigorous pruning If indeed the series is to live up to its title—and it is by so doing that it will continue to earn the gratitude of the profession—the contributors should eschew any desire to be encyclopædical, and confine themselves to critical reviews of recent work.

The Thyroid

Surgery, Syndromes, Treatment By E P SLOAN, M.D Edited by Members of the Sloan Clinic London Baillière, Tindall and Cox 1936 Pp 475 45*s*

WRITTEN by a surgeon who before he died in 1935 had a vast experience of operations on the thyroid gland, this posthumous book deals with this gland mainly from the surgeon's point of view It purports, however, to cover the whole gamut of thyroid diseases, especially that of simple and toxic goitre, and includes also chapters dealing briefly with the parathyroids and thymus, particularly in their relation to the thyroid. Dr Sloan gives an able and detailed account of the surgical anatomy and of the various steps in operative procedures on the thyroid gland, the choice of the anæsthetic and the pre operative management of the case are well discussed

The early chapters on the physiology of the thyroid and on the ætiology and pathology of goitre, however, are disappointing Due credit is given to Kendall for the isolation of thyroxine, but no mention is made of its synthesis by Harington. It is referred to as thyro oxy indol and given Kendall's original formula $C_{11}H_{10}O_3NI_3$, the fact that Harington has since shown it to be a derivative of tyrosine and to possess the formula $C_{15}H_{11}O_4NI_4$ *having been over looked* The author supports the dysthyroidism hypothesis of toxic goitre, which is not accepted by most authorities on the disease "The secretory product or products in thyroxine that complement iodine" he calls *thyroin (presumably the same as* Harington's thyronine), he pictures it as "the active principle contained in the thyroxine molecule that differentiates thyroxine from iodine" *Dr Sloan's* thesis is that this unknown element has a great affinity for, and combines with, the iodine in the colloid, producing "wholesome' thyroxine and that, if iodine is not present in the colloid of the follicle, true thyroxine is not formed and the unknown element enters the circulation as a toxic substance This suggestion, which can hardly be elevated to the rank of an hypothesis, is refuted by the facts (1) that the iodine free compound (which is not "an unknown element" but has a definite formula) has been found to be completely inactive, and (2) that in the early stages of simple goitre, where there is marked hyper plasia and little or no iodine present in the follicles, toxicity is absent

Dr Sloan still held to the view that the thyroid is the seat of the primary disturbance in toxic goitre, against the experimental evidence of the last ten years His frequent reference to toxic goitre as diffuse hyperplastic goitre leads to confusion, especially in the chapter on pathology, and in the first paragraph on p 74 the suggestion that where a simple hyper plasia involves the whole gland and continues uninterruptedly it results in the symptoms of Graves's disease is not acceptable Readers would be advised to pay no serious attention to these early chapters The rest of the book is a valuable contribution to thyroid surgery, and a word of praise is due to the illustrations, especially those of the surgical anatomy and operative technique

History of Modern Morals

By MAX HODANN Translated by STELLA BROWNE London William Heinemann (Medical Books) Ltd. 1937 Pp 338 12*s* 6*d*

THIS book would seem to be written to prove that sexual knowledge has still to wage constant battle with something which the author regards as "Victorianism," and throughout the pages irritation is displayed wherever restraint is exercised against the dissemination of information upon sex matters in any phase, development, or aberration Is it Victorianism —a silly term which may imply a dozen things but which for Dr Hodann would seem to mean hypocrisy —to point out that before knowledge is spread it is necessary that the knowledge should be sound, and that it is practically useful to ascertain that its spread is made where the lessons can be understood and are needed? After a chapter entitled the "Secret of Generation," which resumes in a series of brief notes the functions and mechanisms of sex, the author finds himself compelled to "pursue and dissect the contradictions and cruelties which have grown out of the sexphobia of the nineteenth century" Accordingly we get forty pages dealing with sexual perversion, the case of Prince Eulenburg being given in some detail, while that of Wilde is alluded to in a way that reveals the author's credulity

The chapters dealing with the fight against venereal disease and the history of birth control are quite well done and here an extensive bibliography is well selected, which cannot be said for other sections of the book. But it shows a want of all sense of proportion to describe workers in the various fields of what the author calls "sexology" as "pioneers who are in the uncomfortable position of urging a cosmic evolution" This exaggeration of the effort and object fails to impress readers who know something about the subject, and huge bibliographies which include publications of no importance side by side with really sound work give a wrong impression. Dr Hodann has written an interesting book, but is described on the wrapper as one who "knows the economic conditions of all Europe and the latest conclusions in medicine and psychology,"—and that is a difficult description to live up to

THE LANCET

LONDON SATURDAY FEBRUARY 27 1937

MENTAL DISORDER AND ENDOCRINE ACTIVITIES

THE subject of the combined meeting of the sections of psychiatry and medicine of the Royal Society of Medicine[1] might almost be called inevitable Psychiatry looks everywhere in medicine and indeed sometimes outside medicine for new methods and stimulation It has for centuries been accustomed to look particularly to the study of the nervous system It could not help looking similarly to the endocrine glands when they too were recognised to play an important part in the integrated activities of the body Striking clinical observations as in thyroid disorder indicated that anomalies of endocrine secretion could affect the mind, and mental changes occurring at sexual epochs of life such as puberty and the menopause were naturally attributed to endocrine influences But the assumptions made as to the specific relation of endocrine anomalies to characteristic mental states were unjustified and the hopes expressed as to the efficacy of endocrine replacement or diminution in putting mental disorder right were not realised It did not prove possible to demonstrate in any but thyrogenic disorders the supposedly causal endocrine agent nor did therapy based on such views benefit the patients

With the enormous advances in endocrinology during the last few years the situation has altered There have also been advances in our understanding of the nervous system as Prof GOLLA pointed out which enlarge and illuminate the problem There is no longer an excuse for vague speculation about functions and secretions on which much precise work has been done nor for giving endocrine preparations in an inactive form or ineffectual dose indeed some psychiatrists have lately gone to the opposite extreme in their empirical use of large doses of insulin for producing shock in schizophrenia Moreover both endocrinology and psychiatry recognise complex interrelations where once there seemed an elusive simplicity It is scarcely any longer expected that the emotional and other forms of mental disorder can be laid directly or solely to the door of some anomaly of the ductless glands But with regard to constitution the opinion is expressed sometimes very naively, that it is determined and given its individual character by a combination of endocrine influences This conclusion is tenable for physical constitution if the endocrine secretions are recognised as among the essential mediators—not the originators—of the process of development Since psychiatry led chiefly by KRETSCHMER has accepted the notion of close psychophysical correlation in respect of certain broad types the assumption has been fairly readily made that all the impulses which are the groundwork of character and not merely the sexual ones are influenced by the endocrine secretions Hormic systems have made play with the assumption But unfortunately observations to confirm it are still to seek. It would be hard to say which interpretation of psychic constitution is now the less defensible that which postulates too much of one secretion and too little of another or explanation in loose terms such as ' polyglandular dysfunction and gonadal insufficiency It does not follow however, that our present ignorance in this matter of constitution or in regard to endocrine aspects of mental disorder will continue A very painstaking investigation by Dr WALTER FREEMAN[2] for example though it yielded no clear findings on these points suggested to him that the biological and chemical assay of active endocrine principles in the circulating blood will be a line of advance The speakers at the Royal Society of Medicine s meeting showed how large was the scope of further research

Dr J H SHELDON[3] has lately drawn attention as have some other writers to the presumptive anomaly of pituitary function that may be found in psychogenic ' anorexia nervosa Such observations underline the interdependence of psychological neural and endocrine mechanisms It is in reversible anomalies of function rather than in permanent disease or histologically visible damage of the ductless glands that the psychiatrist s interest lies The extravagant and cloudy guesses which may be read of in historical reviews of this problem[4] are giving place to the sober working out of detailed relationships

THORACOPLASTY IN PULMONARY TUBERCULOSIS

AMONG the papers that appear in the fifth volume of the *Brompton Hospital Reports*[5] is one which records the experience gained during the last fourteen years in the treatment of pulmonary tuberculosis by thoracoplasty It has been compiled by the registrars under the direction of the honorary medical and surgical staff and [illegible] of an objective statement of wha[illegible] happened with a minimum of con[illegible] the period 1922–35, 437 cases were [illegible] method and the yearly figures [illegible] continuous increase in the fr[illegible] cation. At the present time th[illegible] employed in some 6 per cent [illegible] pulmonary tuberculosis [illegible] YOUNG points out in an [illegible] volume is restricted b[illegible] and pathological factors, each of which demands careful consideration in the selection of cases for operation The average operation mortality over the whole period under review has been 14 6 per cent, but has fluctuated rather widely from year to year

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[1] Reported in *Lancet* of Feb 20th p 442

[2] Freeman W *Arch* [illegible] 193[illegible] p 191.

[3] Sheldon J H *Lanc*[illegible]

[4] Rosenfeld M [illegible] Vorgänge in psych[illegible] Neurol *Psychiat* 193[illegible] Bodily Changes [illegible]

[5] *Brompton H*[illegible] Department of the [illegible]

It is never easy to evaluate the effect of any method of treatment on an exact quantitative basis, and the difficulties, to which reference is made in our correspondence columns, become formidable when we are dealing with a disease such as pulmonary tuberculosis, which has a very variable natural course Many things that are difficult are, however, well worth attempting, and the comparative assessment of different methods of treating any malady from which man suffers is a problem that clearly falls within this category If it has a special urgency in pulmonary tuberculosis, it is because the discomfort associated with intrathoracic intervention is not negligible, and patients have a right to know to what extent the prognosis is likely to be improved thereby, if this can be ascertained At present, as Dr **Otto May** points out on another page, the insurance companies seldom regard a history of artificial pneumothorax in a tuberculous proposer as justifying more favourable terms than he would get without it, since "the evidence of a definitely better prognosis is still rather scanty" For insurance purposes, he says, the efficacy of thoracoplasty is of less moment, since in the cases severe enough to require such a drastic procedure the terms of acceptance would hardly be affected, and anyway the number of proposers in this category is small But clinically there can be no excuse for failing to follow up cases treated by this method and to ascertain whether, all things considered, they have benefited therefrom The special difficulty in all such inquiries is to devise criteria of benefit that will be generally accepted The basis of evaluation adopted by **Brooks** and **Lander** is the probability of living for five years calculated for each year that has elapsed since the operation In the customary decimal notation, this value is 0 67 immediately after the operation—that is, 67 per cent of the patients are alive five years later—and it rises in each subsequent year until it reaches 0 78 in the fourth post-operative year, beyond which no significant figures are yet available These are compared with figures, published in an earlier report, showing the probability of surviving five years for Grade B3 cases in general, and for Grade B3 cases treated by artificial pneumothorax The corresponding probabilities in these series were, for the cases receiving no special treatment, 0 24 and 0 46, and for the cases treated by artificial pneumothorax 0 55 and 0 59 On their face value, these figures suggest that thoracoplasty is a promising procedure in a limited number of carefully selected cases How far the face value can be trusted is, of course, another question It clearly depends on whether the cases treated by thoracoplasty, the cases treated by artificial pneumothorax, and the cases in which neither procedure was employed were similar in all relevant respects, other than the method of treatment adopted This, perhaps, is hardly likely to have been the case, but if on these grounds we should hesitate to accept the recorded figures as an accurate quantitative description of the relative advantages of thoracoplasty we should certainly not neglect the suggestion that they offer

The staff of Brompton Hospital are to be congratulated on placing these facts on record, and on the way in which the work has been done If the staffs of our voluntary hospitals, working as teams, would observe over adequate periods of time the effects of various forms of treatment in various selected types of disease and report on their findings, we should, within a generation, acquire knowledge which we very badly need

GASTROSCOPY

Gastroscopy[1] in English-speaking countries is still so new that those who write about it write as for the uninitiated Two introductory papers of this kind have recently appeared, one by **Jakob Schloss**[2] from Boston, and one by **Hermon Taylor**[3] from the London Hospital. Dr **Schloss** was formerly an assistant in **Morawitz**'s clinic in Leipzig, where **Henning** did much of the pioneer German work on gastroscopy, and his paper is largely a summary of German opinion and experience, borne out by his own He emphasises the usefulness of a gastroscope with a slightly bent distal end carrying a window directed laterally and a little proximally, which will make visible the pylorus of a J shaped stomach, this is not an alternative but an accessory to the standard flexible instrument With two colleagues, Dr **Schloss** has also published[4] a summary of the results of combined examination of 100 patients with the gastroscope and with the radiographic "relief" method, showing that in difficult cases the one method supplements the other and a larger proportion of well-founded diagnoses can be reached than with either alone Mr **Taylor**'s paper is not merely a descriptive review but also a detailed presentation of his own experience Working as Moynihan fellow of the Association of Surgeons he has made 60 gastroscopic examinations of selected patients He claims part credit for the introduction of the inflatable balloon near the end of the instrument, described in our columns[5] by H W **Rodgers** last year, it can be used to push away, and thereby render visible, areas of the lesser curve that lie close up against the window of the gastroscope, and it is undoubtedly an important technical improvement His records include several cases where doubtful ulcers could be recognised as either malignant or benign, several examples of the discovery of gastric ulcers undetected radiologically, and fourteen cases of gastro-enterostomy where the presence or absence of a stomal ulcer could be established Even with so short an experience he has presented very fair grounds for his view that gastroscopy is a useful diagnostic procedure in cases where radiological examination is not conclusive He also has an interesting note on the difficult problem of gastritis He suggests that the prominence of folds and mammillation of the mucosa that characterise hypertrophic gastritis are not inflammatory changes but anatomical characters of that mucosa and that similarly the thinning of the mucosa in atrophic gastritis is an anatomical peculiarity and not a pathological phenomenon The hypertrophic mucosa and the atrophic mucosa he would refer respectively to HURST s congenitally hypersthenic and hyposthenic types of stomach and he thinks that a gastritis, shown by increased redness, congestion, hæmorrhage loss of sheen and increase of mucous secretion may be and often is superposed on either of them It is an attractive suggestion that should be susceptible of test so far as the grosser changes are concerned, even on post-mortem material Gastroscopy is attracting the attention of an increasing number of both physicians and surgeons in this country Mr TAYLOR s paper with its very good illustrations will be of considerable value to them

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[1] See *Lancet* 1935 2 1244

[2] *Int Clin* 1936 4 1

[3] *Brit J Surg* January 1937 p 469

[4] *Amer J med Sci* February 1937, p 171

[5] *Lancet* 1936, 2 438

ANNOTATIONS

WHAT AN ACUTE GENERAL HOSPITAL SHOULD COST

SOME four years ago the Minister of Health appointed a strong departmental committee to consider the cost of building and maintaining various classes of public buildings including hospitals They were asked to pay special attention to the revision of standards to modern methods of construction and to the possibility of securing economy without loss of efficiency They have had a busy time visiting hospitals and hearing witnesses and have met 38 times in plenary session under the chairmanship of Mr Adam Maitland M P the medical members of the committee being Dr H W Bruce, Dame Janet Campbell Dr J Ferguson Dr Barrie Lambert, Dr T S McIntosh and Dr W Rees Thomas. The report now issued is the first instalment, dealing as it does with a particular type of hospital called conveniently if colloquially the acute general hospital meaning thereby a hospital designed and equipped for first-class medical and surgical work and intended for patients whose condition whether it be acute or chronic, calls for active medical or surgical treatment But much of the ground which has been covered is common to other parts of the subject and need not be gone over again in the later reports The committee is quite definite in its first conclusion that it is not practicable to express hospital standards in terms of cost—there are too many variables—and they have met the apprehension that standardisation may tend to stereotype design and impede progress when admittedly hospital design is in a transition stage, by refraining from publishing standard or model plans and giving only illustrative diagrams They point out too that to divide the total cost of a hospital by the number of patient beds and call the resulting figure the cost per bed is another very fallacious practice. Even the cost of similar hospitals does not vary directly with the number of beds the requirements of different hospitals vary widely and one hospital may have been built as a completed institution while another is planned with a view to early extension Once built a hospital lasts for many years, and the annual cost of maintaining it matters more than the first cost since sinking fund charges are only a small part of total annual expenditure The standards suggested for in patient accommodation are therefore something better than the irreducible minimum and in staff quarters they look to securing a substantial degree of comfort; in such things as operating theatres they have felt it right to be fairly liberal Every page of the report demands careful study but the principal conclusions are set out concisely at the end The standard ward unit is to contain 30 beds 4 of them in one bed rooms although a kind word is given to the recent tendency to replace the main ward by two or more smaller wards The longitudinal arrangement of beds is regarded as an interesting innovation still on its trial; its adoption is not likely to affect constructional cost much one way or the other The standards for main wards are fixed by general consent as height 12 ft (11 ft if fewer than 16 beds) space between bed centres 8 ft width 25 to 26 ft Some of the members would be content with 24 ft On the residential side an administrative sister is to have 240 sq ft for her bed and sitting rooms, a ward sister 140 sq ft for her bed-sitting room the nurses 100 sq ft for bedroom with a bathroom for every 6 to 8 bedrooms The report runs to 84 pages and may be obtained from H.M Stationery Office for 1s 3d

THE TREATMENT OF GRAVES S DISEASE

THE respective merits of the medicinal operative and radiological treatment of Graves s disease are discussed by Dr Haakon Rasmussen [1] of the Haukeland Hospital Bergen, Norway in the light of 98 cases treated in the decade 1924–34 Follow up examinations conducted some time after discharge afforded an opportunity for comparing the merits of these different methods of treatment. Though no final judgment could be passed on the basis of such heterogeneous material and so small numbers this study gives more than an inkling of the merits and shortcomings of the methods of treatment under review It may be said at once that conservative treatment does not emerge from this comparison with flying colours although the cases enjoying it were relatively slight. Of 48 patients whose treatment was limited to strict rest in bed a vegetarian diet, and the administration of iodine, sedatives &c 42 were traced In 14 or possibly 16 cases relief of thyrotoxicosis had been achieved but the majority still suffered from psychoneurotic manifestations which sometimes greatly reduced the working capacity of these patients who could not therefore be considered as cured Indeed only 4 of the 42 could be regarded as completely symptom free and cured In as many as 18 cases conservative treatment seemed to have had no influence on the course of the disease but counterbalancing this observation is the fact that 10 patients were fully fit for work Though this group of 42 represented on the whole comparatively mild forms of the disease as many as 8 of the patients were found to have died in the short period under review their Graves s disease having contributed in some degree to the fatal issue in several of these cases The follow up findings in the 41 cases treated by thyroidectomy were also not particularly cheering unless account be taken of the seriousness of the pre operative condition of many of these patients In 28 cases there was no evidence of thyrotoxicosis, but only five or six of these 28 were wholly rid of their symptoms, and could be considered as cured, the remainder had various psychoneurotic symptoms Further, 7 patients still showed signs of thyrotoxicosis, and 6 suffered from permanent hypothyroidism or myxœdema Tetany was observed in 2 cases, and paralysis of the recurrent laryngeal nerve in 4 Permanent hoarseness and asthma had developed as a sequel to the paralysis of the recurrent laryngeal nerve in one case There were also minor troubles such as discomfort on swallowing due to adhesions in the field of operation To lighten this gloomy picture it should be noted that 26 of these patients were fit for work, though many of them had not achieved full working capacity till a year or two after operation. The radiologically treated group was comparatively small. Of the 10 patients thus treated 8 showed no signs of thyrotoxicosis on re examination, but most of them still suffered from the psychoneurotic symptoms, and a complete cure could be claimed in only two or three cases Dr Rasmussen's discussion of the comparative merits of operative and radiological treatment betrays no strong bias either way, and all who are interested in this subject would do well to read the judicious summing up in his paper which is published in English

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[1] Acta med. scand 1937 91 63

THE DEVELOPMENT AND STRUCTURE OF THE SKELETON

EXPERIMENTAL morphology is fairly new and its exponents are mostly those who have actually taken some part in its development especially during the last few years many excellent monographs on the subject have made their appearance The latest[1] is a critical summary by Dr P D F Murray, and though it consists mainly of a review of recent work it includes a certain amount of unpublished research done by Dr Murray himself and other workers at the Strangeways Laboratory The most important developmental fact which emerges from the welter of diverse opinions and results is the fundamental distinction between the primary cartilaginous skeletal element and the bone which replaces it The first is determined by forces inherent in the organism, but the second taking the general shape given to it by the structure it replaces, is yet but the material employed in the play of many and varied external forces which seem to be solely responsible for its final form and constitution

Now and then one is struck by the crudity—we had almost said childishness—of some of the hypotheses advanced by the experimenters in this field (and not in this field alone) to explain their results They seem in a hurry to bring forward purely physical explanations of the simplest sort in matters which are plainly organismic A survey of the stores of related facts garnered by the older morphologists would surely be of value to the experimenter, enlarging and modifying his outlook considerably, the old morphology and the new must meet and agree if progress is to ensue and the sooner the better The problem of the appearance of the cranial membrane bones for example illustrates clearly this need for correlation Some at least of the hypotheses brought forward to account for the existence and limitations of these bones would have been suppressed if their authors had considered a wider morphology The ingenuity displayed in explaining the appearance of these bones in situ in the human head would have been recognised as misplaced had the bones been followed back into reptilian classes or even lower, and such notions as pressure from the brain would not have been suggested as one of the factors of determination Among the observations recorded by Dr Murray on this subject two seem to us of great interest, and apparently not in opposition—notably the views of Kokott and of Troitsky These hypotheses still lack the embryological evidence in the vertebrate classes which would lift them to the level of reasonable theory, but doubtless this will be supplied in the future Dr Murray has put together in an engaging shape records of experimental work not only on bones but on the form of joints and false joints, this work will certainly modify the views of those concerned with the pathology of these structures

WATER BALANCE AND THE MENSTRUAL CYCLE

THE minor ailments and dislocations of physiological equilibrium that often attend menstruation offer a rich source of material for both clinical scientist and physiologist, and there are signs that recent discoveries in endocrinology are leading to its investigation One of the commonest, though not the most distressing of these abnormalities, is a rather abrupt retention of fluid which sets in during the last few days of the cycle, reaches a peak at or about the onset of menstruation, and disappears rapidly as the flow is established As a rule the symptoms are trivial. Slight thirst, a sharp rise in body weight, and a feeling that clothes are too tight, may be all that is noticed, but direct evidence of waterlogging, in the shape of pitting œdema of the legs, is not rare What relation, if any, this menstrual œdema bears to the waterlogging of pregnancy and the gross œdema of pre-eclampsia is not clear, but it is permissible to suspect that the three may have something in common

These facts lend particular interest to the observations of P L Krohn and S Zuckerman[1] on cyclical observations in the water balance of Old World monkeys The monkey is endowed (or cursed) with a sexual cycle which resembles that of woman in the appearance of menstruation at intervals of about 30 days The simian cycle, however, is distinguished by an additional set of phenomena which reach a climax in ovulation about midway between successive menstrual episodes These additional changes seem to correspond to œstrus in the lower mammals and comprise gross swelling of the genital region, apparently composed of fluid, but not, like simple œdema, displaceable by pressure Krohn and Zuckerman noticed that the ebb and flow of the swelling was accompanied by a considerable and parallel rise and fall in body weight, and they decided to find out whether the latter could be attributed to gain and loss of body fluid Adopting principles familiar to students of metabolism, they accordingly made daily measurements of the various fractions of fluid intake and output and so obtained estimates of the total water exchange Such estimates are necessarily approximate, but the fluctuations described seem well outside the limits of experimental error.

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[1] Bones A Study of the Development and Structure of the Vertebrate Skeleton By P D F Murray M A D Sc. Cambridge The University Press 1936 Pp 203 8s 6d

[1] *J Physiol* 1937 88 369

It appears that during the pro œstrus phase of genital swelling which begins during or at the end of menstruation there is progressive retention of water which is rapidly corrected as the swelling subsides The kidney seems to bear the brunt of these fluctuations for the output of urine falls at first, and rises abruptly after ovulation. It seems clear that the change in body weight can be fully accounted for by these shifts of body fluid and the latter in turn seem largely if not wholly due to the local changes in the sexual skin for which finally the œstrogenic hormone is responsible What relation these phenomena in the ape bear to menstrual œdema in women is at present uncertain It has been pointed out above that the latter begins to appear shortly before menstruation at a time when the corpus luteum is morphologically at least in the ascendant In the ape in contrast the œdema is greatest at a point diametrically opposite in the cycle—namely when the follicle is ripe and the luteal phase at its lowest ebb Moreover in women the œdema is generalised and ovulation is not attended by noticeable swelling of the genitalia. These facts seems to suggest that the phenomena in the two species are entirely different in origin. On the other hand, there is still some discrepancy between the morphological and the biochemical changes in the sex cycle The excretion of œstrogenic hormone for instance although greatest at the time of ovulation is known to rise to a second peak just before menstruation. The significance of this second peak is not at present clear Little is known about the ability of the tissues to destroy store or utilise sex hormones, and the rate of excretion or the concentration in the blood of œstrin may give misleading impressions about the rate of secretion of the hormone. It is therefore possible that despite chronological and anatomical differences the menstrual œdema of woman may be in some way related to œstrous swelling in the ape.

ABNORMAL FINGER PRINTS

Dr Wolfgang Abel assistant in the Kaiser Wilhelm Institute for Anthropology in Berlin has made some interesting observations[1] on certain abnormalities in finger prints He shows that there is a tendency for the pattern to be distorted over a particular area of the finger and that a remarkably similar area is affected on the same finger of the other hand From a study of fœtal development he has established the fact that the whole of the normal pattern does not appear at once some parts of it developing before others The region of the pattern which is most often abnormal is that which appears last in normal development He therefore concludes that the abnormalities are induced at this particular stage of fœtal life His suggestion as to the cause of these abnormalities is not very easy to follow The type of normal finger print is related he says to the convexity of the finger surface and this in turn is dependent upon the tension of the underlying tissue The abnormalities can be recognised as local developments of one type of pattern on a finger which was previously developing another Such a change must therefore he concludes be due to internal changes of tension and to confirm this he cites a single observed example of a fœtus whose left hand had been constricted (presumably by the cord) in the uterus The finger prints of this hand developed typical abnormalities while the other remained normal. This Dr Abel regards as corroborating his tension theory and he would like to see his observations followed up since it is known that other abnormalities (bodily and mental) tend to be associated with abnormal finger prints

FAMILY DOCTORING IN THE XVII CENTURY

WHEN William Russell, fifth Earl of Bedford, wanted to know how much ready money he had at his disposal he had only to look into the great trunk which stood in Bedford House in the Strand and served as the family bank through which all the finances of his establishment were managed The rents and dues received from the stewards of the various estates of the family were placed in it and when any money was paid out, whether it be £120 to buy satin and brocade for the Earl and his son to wear at the coronation of Charles II or one shilling in November 1681 to be given to the page for twice cutting his hair it was taken from this trunk and the amount noted in a small stout parchment-bound account book. The increasing complexity of these accounts as the family s style of living became more luxurious is demonstrated in Miss Gladys Scott Thomson s entertaining analysis of the Russell budgets from 1641 to 1700[1] From these detailed accounts we learn a great deal of the everyday life of these people what they wore, what they ate, how they educated their children what they spent on their amusements what they planted in their gardens how they visited Bath and Tunbridge Wells, and how they filled their libraries and wine-cellars

One of the earliest items in the book (in August, 1641) is the sum of £20 paid to Dr Clarke for his pains going to my lady of Bedford when she was sick of the smallpox at Woburn with another £2 4s to the hackney coachman that carried him there. The countess recovered and when the family returned to town the disinfection of the house was carried out by Anthony the porter who was given five shillings for pitch and frankincense to smoke the house and yard. Sometimes the doctor appears to have been paid in instalments for in May 1642 £20 was paid to a Dr Caleb Rawlin (or Rawlings) in part of the £40 which he is to have for the cure of my little lord s legs Modern dietitians would be interested in the entry of fourpence in April 1653 which went to buy scurvygrass, or gittings to put in the children s ale The Earl was responsible for the health of all his household and the principal doctors who attended were Sir John Micklethwait and Sir Edmund King and a Frenchman Dr Charlot. They did not, however always visit their patients sometimes the tutor himself an amateur leech would write describing the illness and the doctor would reply by letter saying how it was to be treated. Other minor medical attendants were the corn cutter and the barber who came to cure the toothache and to bleed the household regularly in turn. A great many remedies were also fetched from the apothecary at Aylesbury and we read of Betty Buskin the laundry maid receiving a vomit and Mr Robert s footman a plaster and oil of St John s wort Many forms of scurvy occurred both among the family and the servants (in spite of the gittings) and were treated with antiscorbutic tincture and chalybeate water Most of the nursing of the sick was done by the wives or the daughters of men employed on the estate, of whom the favourite was the gardener s wife When a disease was infectious the nurse was sent to live apart with the patient and was entirely responsible for his care board and lodging Miss Thomson has chosen some beautiful portraits to illustrate her description of life in this family

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[1] Forsch Fortsch dtsch Wiss 1937 13 20

[1] Life in a Noble Household 1641–1700 London: Jonathan Cape 1937 Pp 406 12s 6d

A STUDY OF HEPATIC ŒDEMA

THOUGH much work has been done on œdema in other parts of the body, œdema of the liver has had little attention Keschner and Klemperer[1] have now studied its incidence in 505 unselected autopsies and in a further selected series The condition was diagnosed histologically when the capillary walls could be seen to be separated from the liver cells, and when the pericapillary spaces were distended by a granular (protein) material which could be stained. Of the 505 unselected cases 79 showed these changes "Back pressure," attributed to cardiac failure, accounted for nearly half of these Of all the cases of cardiac failure examined 39 per cent showed hepatic œdema, yet of 9 cases of lipoid nephrosis with generalised œdema not one showed it There were 60 deaths in uræmia and they gave the following interesting results of 24 cases under the heading of "malignant nephrosclerosis" no less than 18 had hepatic œdema, while of 36 cases of uræmia due to causes other than this, such as pyelonephritis and polycystic kidneys, only 14 showed the change Hepatic œdema was commoner in influenza than in any other infectious disease, and it was noted in 5 out of 11 cases of diabetic coma It was also common in association with exophthalmic goitre Keschner and Klemperer refer to the type of hepatic œdema that follows back pressure as "mechanical œdema" and to the other variety, in which there can be no factor of back pressure as "primary œdema," and they suggest that it is due to increased permeability of the capillary wall They claim that the demonstration of primary hepatic œdema is at present the only morphological evidence of increased capillary permeability

DERMATOLOGISTS ON ALLERGY

MUCH of the early work on allergy by Pirquet, Bloch, Low, and others concerned the skin, and many of the most spectacular exhibits of allergy are cutaneous On the other hand, the dermatologist must beware of too readily invoking allergy as an explanation, just as the general physician must think twice before he allows the allergic hypothesis to be extended to cover most of the type reactions that make up constitutional medicine The practical mind will not at present accept more than a small proportion of medical disorders as being built upon this specific pattern, and Goldsmith[2] and Dowling[3] think it unjustifiable even to argue that all cases of eczema and urticaria are reactions of the antigen antibody type Dr Dowling believes that the general assumption that atopic eczema—that is, eczema of the inherited diathetic type—is due to food allergy is false, and probably most dermatologists will agree with him Dr Goldsmith draws attention to the existence of "latent allergy," in which a positive intracutaneous test is present—usually as the result of exposure—but there are no clinical manifestations He also emphasises the importance of adventitious factors thus a ringworm infection of feet may determine a sensitisation of hands to fur dyes, or an attack of erysipelas may determine sensitisation to quinine in a patient previously tolerant of the drug There is much that is confusing in the subject and nothing more so than the irregular relationship of intracutaneous tests to clinical behaviour In infantile eczema the positive reactions to egg white, cow's milk, and other common allergens have rarely if ever any relationship to the eczema Dermatological medicine inevitably has a certain simplicity and honesty, for the dermatologist, more than most clinicians, sees his failures on the surface Hence the significance of these rather discouraging reports Unfortunately, like most fashionable theories, allergy has left a trail of disappointments, and we must take care not to deceive ourselves or our patients with its mysteries

THE CHEST LEAD IN THE DIAGNOSIS OF CARDIAC PAIN

IT is well recognised that the electrocardiogram can be of great value in the diagnosis of cardiac pain, particularly when the symptom is atypical, as when the pain is a minor complaint or its situation unusual, but like all instrumental methods it has its limitations Diagnostic changes may be lacking under certain conditions, the area affected in myocardial infarction may be too small to produce them, the tracing may not be made at the right time to detect transient changes, being either too early or too late, or the plane of the leads may be unsuitable for recording the changes Myocardial infarction sometimes has an ingravescent onset, with mild pain of one or two days' duration before the typically severe symptoms arise During this initial period, as reported by H Feil,[1] the ordinary electrocardiogram may show little or no change, but more significant alterations may be shown by the chest leads—that is, by the curves obtained when one or both electrodes are applied directly to the chest wall. These have been extensively studied during the last few years, especially in America, and it has been shown that in coronary disease there may be characteristic changes similar to those seen in the standard leads The results have been complicated, however, because of the variety of ways in which the electrodes have been applied, each method giving a different picture under the same conditions

Dr Willcox and Dr Lovibond have investigated the changes in a chest lead (termed lead IV) in 102 patients with coronary disease, applying the left arm electrode over the heart and the right arm electrode to the back of the chest, and they record their results on p 501 With this method the initial ventricular deflection and the T wave are upright, and it has an advantage over other ways of disposing the electrodes in that the curve is comparable to that normally obtained with a limb lead In 62 patients with effort angina, they found 8 who showed changes in lead IV suggestive of coronary disease, but whose standard electrocardiograms were normal In a further 40 patients with acute coronary occlusion, there were also 8 in whom the diagnostic changes were confined to the chest lead All of these had anterior apical infarctions, in posterior infarction lead IV was of no help, since it was altered less often than the standard curves and never independently In addition it was found that lead IV was of some value in localising the site of an infarction, confirming the indications given by the standard leads, or supplementing them so as to allow the diagnosis of involvement of both anterior and posterior walls of the left ventricle These results suggest that lead IV is chiefly of value in the diagnosis of anterior lesions, when the changes may occur earlier and last longer than those in standard leads Dr Freeman also reports on p 400 results obtained in acute coronary occlusion with another type of chest lead. His three patients all with typical symptoms showed limb leads characteristic of anterior infarction and in all cases the chest lead was confirmatory though because of the different position—he applies the left-arm electrode to the left foot and the right arm electrode over the apex—the alterations in the waves were in the opposite sense to those recorded by Willcox and Lovibond.

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[1] Keschner H W and Klemperer P (1936) *Arch Path* 22 583

[2] Goldsmith W N (1936) *Brit J Derm* 48 593

[3] Dowling G B, *Ibid* p 601

[1] *Amer J med Sci* January 1937, p 42

The chest lead appears therefore to have a definite value in the diagnosis of effort angina and of acute coronary occlusion since in a minority it shows significant changes that are absent from the curves obtained with the limb leads though this may be true for only a limited period of the disease It is also clear that the reverse occurs—that is these changes may be confined to the limb leads A confident diagnosis of both coronary occlusion and effort angina can of course be made from symptoms alone when these are typical in the absence of change in the standard electrocardiogram; but with an atypical clinical picture and a normal tracing from the limb leads there is the possibility that valuable evidence may be obtained from a chest lead There are now sufficient data to warrant using this lead in atypical cases, and further investigation may justify its use as a routine It is to be hoped that the exact disposition of the electrodes to the chest wall will become standardised and the method adopted by Willcox and Lovibond with the left arm electrode over the heart seems to be the best

TUBERCULIN POSITIVE CASES WITH NEGATIVE RADIOGRAMS

THE pioneer work of Heimbeck and his Norwegian colleagues has taught others to seek in probationer nurses answers to some of the unsolved problems of early pulmonary tuberculosis The more this material is examined the more does it impress research workers with the facilities it provides for controlled tests. And it has become a rule in certain hospitals abroad for probationers to be tested with tuberculin and to be kept under X ray and skin test supervision throughout their hospital careers during which the changes from a negative to a positive tuberculin reaction can sometimes be correlated with certain exposures to infection In many hospitals in Finland probationer nurses are tested with tuberculin as a routine measure; and in a recent publication[1] Dr Ivar Wallgren has reviewed his experiences with between 700 and 800 tuberculin tested nurses In the Finnish-speaking community only about 13 per cent gave a negative reaction to an intracutaneous injection of 1 mg of tuberculin, whereas among the Swedish-speaking probationers the proportion of negative reactors was about 70 per cent The most instructive observations however concerned the 41 nurses whose tuberculin reactions changed from negative to positive during their training In 30 of these there were no symptoms no clinical phenomena indicative of a tuberculous infection but in the remaining 11 the transition was associated with such symptoms as fever lassitude headache pain in the chest and so forth The radiological examinations of these 41 nurses were negative; in only 3 cases could shadows indicative of intrathoracic tuberculosis be found The primary focus of disease such as Ranke described a score of years ago would therefore seem to be seldom demonstrable in association with very early tuberculous infection Yet in Wallgren's view these nurses must have harboured a primary focus of tuberculosis in their lungs, however negative the radiological examinations may have been. In support of this opinion he gives an account of three cases in which the radiological examination proved negative although a few days later post-mortem examinations revealed recent primary tuberculous lesions in the lungs These observations need not necessarily discredit the radiological examination as a guide to early tuberculosis The evidence which the radiologist can adduce in favour of his speciality in this field is convincing enough. But between the first appearance of a positive tuberculin reaction and the first appearance of radiological shadows indicative of tuberculosis there seems to be an interval.

PRONTOSIL IN ERYSIPELAS

THE clinical evaluation of Prontosil and its derivative p aminobenzenesulphonamide is far from complete, and therapeutic studies on an adequate scale have so far fully demonstrated its capacity only in puerperal fever and in erysipelas Further testimony to its value in erysipelas is presented by W Becker[1] who compares the results in 50 cases with those in the same number treated by other methods the spread of the disease was always arrested and its duration much reduced more so by oral administration of prontosil than by intramuscular or intravenous Local application was found to be useless as is fully to be expected. It is tempting to speculate on how far the amenability of different streptococcal infections to this treatment depends on their morbid anatomy the lesion in erysipelas is highly vascular and since the drug circulates in the blood it seems reasonable to suppose that this is a factor favourable to its action Its effects in other forms of surgical sepsis on otitis media and its complications including meningitis and on scarlet fever still remain to be studied on an adequate scale We publish elsewhere in this issue two clinical notes on cases so treated in one of which sulphæmoglobinæmia developed and certainly contributed to a fatal result This complication which in previous records has been rare and only transient must evidently be watched for contributory causes may perhaps be identified and the condition thus avoided. Meanwhile prontosil is being tried for a number of other purposes Becker himself records complete failure in the treatment of gonorrhœa which is of interest in view of the fact that encouraging experimental results have been reported with the closely related meningococcus He also briefly mentions good results in urinary tract infections a claim recently made more forcefully by H G Huber[2] who treated 14 such cases in children with what appeared to himself striking success These more speculative therapeutic essays will be better interpreted when the experimental work which has placed the treatment of hæmolytic streptococcal infections on so sure a foundation has been extended to other bacteria Since this treatment is now being adopted on an increasing scale and indeed should always be considered in puerperal and surgical sepsis due to Streptococcus pyogenes it may be useful to state again in what forms this remedy is obtainable The original prontosil which was marketed in two forms for administration by injection or by the mouth is now believed to act only by conversion in the body into *p* aminobenzenesulphonamide (referred to variously as "sulphonamide" or "sulphanilamide") Since this substance itself can also be given, and by the mouth, the present tendency appears to be to substitute it entirely for the original product Sulphonamide is obtainable from the manufacturers of prontosil under the name of Prontosil Album, and from many other firms under different names The attachment of trade neologisms to chemical compounds of perfectly defined and even simple composition has always been a source of confusion, and the profession can combat this minor evil and at the same time be sure of obtaining what they really mean by using wherever possible only the proper chemical name of the reagent ordered

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[1] Finska LäkSällsk Handl November 1936 p 933

[1] Derm Wschr Feb 13th 1937 p 221

[2] Münch med Wschr Dec 4th 1936 p 2011

THE TOXIC PROPERTIES OF BURNED TISSUES

EXPERIMENTS in the department of surgery of Edinburgh University have led W C Wilson and his collaborators to regard toxins produced in the burned tissues themselves as the harmful agents in burns[1] It will be recalled[2] that their method is to collect œdema fluid from burned areas on the abdominal wall of rabbits and inject it into healthy rabbits and into mice Intravenous, subcutaneous, and intraperitoneal injections were used Precautions were taken to avoid injury to internal organs by heat, and to produce œdema without skin necrosis and without an external wound that might become infected with bacteria Flaps of sterilised skin were raised and their *under* surface burnt by application of diathermy The flaps were sutured back into position, and the œdema fluid collected at varying intervals with full aseptic precautions Toxicity developed slowly At four hours after injury the fluid was harmless, at forty eight hours it was often lethal There appeared to be two types of toxin, one of which was rapidly fatal, acting apparently as a nerve poison, and having some properties in common with histamine The slower acting toxin did not cause death for a considerable number of hours The only indication of its mode of action was degeneration of the liver cells frequently found post mortem Samples of fluid which had caused death within a few hours were tested by injection into anæsthetised animals they produced a most striking fall of blood pressure, and this occurred in the presence of a vigorously beating heart and an active vasomotor centre Some animals died in generalised convulsions a few seconds after injection, others lived a few hours and showed signs of muscular weakness, quickening of the pulse, pallor of the ears, laboured respiration, and falling temperature In the animals that survived for days there was often a period of apparent recovery before the final collapse A few ultimately recovered

Bacterial action does not account for the development of toxicity in the œdema fluid, for it was shown to be independent of the results of culture experiments made on the fluid before its extraction When special precautions were observed in taking the fluid for culture it was found to be nearly always sterile That fluid extracted up to four hours after burning is innocuous on injection proves that there is no inherent toxicity of the tissue fluids Saline emulsions of normal skin and emulsions of skin made immediately after burning are equally harmless Efforts to identify the toxin chemically were not altogether successful. It appears to be associated with the globulin fraction and to be of a higher order than amino acids and polypeptides A complete proof of the toxic hypothesis requires a demonstration of the presence of toxins in the blood of burned animals In the experiments so far carried out the burned animals themselves did not show ill effects, but as the extent of tissue burned was limited and the development of toxicity slow, it is probable that only small amounts of toxin were being absorbed The animals were all killed within forty eight hours of the burn, they were not allowed to survive after excision of the burned flap of skin

TREATMENT OF MYASTHENIA GRAVIS

Hyland[1] of Toronto describes the effects of several well accredited methods of treatment upon six patients suffering from severe myasthenic weakness He found that neither physostigmine (eserine) salicylate by mouth nor Antuitrin by intramuscular injection had any apparent influence Irradiation of the thymus gland with X rays was followed, in some cases only, by a remission lasting 4–12 months A combination of glycine (5–15 grammes) by mouth with ephedrine (0 25 g three to five times daily) by subcutaneous injection brought more lasting improvement, but its action varied much from patient to patient, and in the same patient on different occasions In four cases dramatic relief of weakness followed the use of Prostigmin, but this was transient and a caveat is entered against repeated administration of this drug on the grounds that it may be followed by alarming deterioration This is perhaps to exaggerate the dangers, and the statement that prostigmin is "impracticable for continued use" cannot be accepted since there are already several cases on record in which quite large doses of the drug have been given daily for over a year without ill effect Although, as Hyland says, "the increased usage of the muscles permitted during the temporary remission may prove actually harmful if repeated too often," no harm is likely to be done if the patients are warned against over exercise of their newly returned strength

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WE regret to announce the death of Sir Henry Jackson on Tuesday last in London, at the age of 61 His death removes too soon a man who combined the general practice of medicine with public service of a high order in the House of Commons and the London County Council

ON Feb 18th the Duke of Portland presented Sir Frederick Hobday, principal and dean of the Royal Veterinary College, with his portrait in oils The portrait was painted by Mr John Hassall, R I, and the presentation was made, on behalf of a large number of subscribers, in recognition of Sir Frederick's great work for the College from which he is now retiring

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INDEX TO "THE LANCET," VOL II, 1936

THE Index and Title page to Vol. II, 1936, which was completed with the issue of Dec 26th, is now ready A copy will be sent gratis to subscribers on receipt of a post card addressed to the Manager of THE LANCET, 7, Adam street, Adelphi, W C 2 Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now

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[1] Wilson W C Jeffrey J S Roxburgh A N and Stewart, C P *Brit J Surg* January 1937 p 601

[2] Mr A N Roxburgh gave a preliminary account of this work at the B M A meeting at Oxford last July See *Lancet* 1936, 2 373

[1] Hyland H H (1936) *Canad med Ass J* 35 372

PRINCIPLES OF MEDICAL STATISTICS

IX.—FURTHER EXAMPLES AND DISCUSSION OF χ^2

THE χ^2 test has a wide applicability and forms a useful test of significance in many medical statistical problems, especially those in which the observations must be grouped in descriptive categories (as in the state of nutrition) and are not capable of being expressed quantitatively. Some further examples of its use may therefore be supplied.

A TEST OF DIFFERENCES BETWEEN SERA

Let us suppose that batches of serum from different groups of donors are used for the prevention of measles and give the results shown in Table IX. (The actual figures are imaginary though the example is drawn from the London County Council report on the measles epidemic of 1931–32.) The value of serum in general is not here in question, the assumption being made for the purposes of this illustration that it has value. The proportion of the total 700 children who after exposure to infection and the administration of serum escaped attack was 73 per cent., but between the different serum groups the proportion varies between 53·8 and 90·0 per cent. Taking into account the numbers of children upon whom each serum was tested, are the different degrees of success in the prevention of measles more than would be likely to occur by chance? Or is it likely that the sera are all equally valuable and the departure *from uniformity in the results would be quite likely* to occur in groups of the size used?

TABLE IX.—*Measles Incidence and Serum Treatment*

Serum No.	Number of children in group	Number of children in whom measles was prevented		Number of children in whom measles was not prevented		Percentage of children in whom measles was prevented
		Observed number	Expected number	Observed number	Expected number	
1	120	80	(*87·6*)	40	(*32·4*)	66·7
2	150	135	(*109·5*)	15	(*40·5*)	90·0
3	90	59	(*65·7*)	31	(*24·3*)	65·6
4	90	68	(*65·7*)	22	(*24·3*)	75·6
5	110	87	(*80·3*)	23	(*29·7*)	79·1
6	60	42	(*43·8*)	18	(*16·2*)	70·0
7	80	43	(*58·4*)	37	(*21·6*)	53·8
Total	700	511	(*511*)	189	(*189*)	73·0

As a first step we presume that an equal degree of success should have been observed in each of the groups; we then measure the observed departure from this uniformity and see whether such departure is compatible with our hypothesis of all the tested sera being equally valuable. As the expected degree of success with each serum on this hypothesis we use the proportion of successes observed in the total—i.e., 73·0 per cent. Applying this proportion to each of the groups we find the number of children in whom we expect measles to have been prevented or not prevented (the italicised figures in parentheses, e.g., 73 per cent. of 120 is 87·6). We observe, for example, that with serum No. 2 considerably more children escaped attack (135) than we expect on our hypothesis of uniformity (109·5). On the other hand, with serum No. 7 fewer children escaped attack (43) than we expect on our hypothesis (58·4). Are these differences more than would be likely to arise by chance?

χ^2 is the sum of the fourteen values of (observed number–expected number)^2 ÷ expected number, e.g., $(80-87\cdot6)^2 \div 87\cdot6 = 0\cdot66$; this sum equals 47·42. Only six expected values have to be calculated independently by simple proportion from the 73 per cent. value in the total that we took as the degree of success anticipated with each serum; the remaining values can be calculated by subtraction from the totals at the side and bottom (e.g., if 87·6 of 120 children are expected to escape attack 32·4 must be expected not to escape attack). Or by the formula $n = (c-1)(r-1)$, $n = (2-1)(7-1) = 6$. The published tables of χ^2 *must therefore be entered* (i.e., consulted) with $\chi^2 = 47\cdot42$ and $n = 6$.

From Fisher's table it will be found for these values that P must be considerably less than 0·01, since the table shows that when $n = 6$ P is 0·01 when χ^2 is only 16·81. Here we have a χ^2 nearly three times as large (outside the range of this table). More extensive tables (Tables for Statisticians and Biometricians issued by the Biometric Laboratory of University College, London. Cambridge University Press. 2nd edition, 1924. 15s.)[1] show that P is less than 0·000001. In other words, if our hypothesis that the sera are all equally valuable in prevention of measles is true, then *less than once in a million* times in groups of children of the size here tested should we reach merely by chance results which departed from that uniformity of success to the extent that we have observed with these children. We may therefore reject our hypothesis and conclude that these results differ by more than is likely to be due *to chance, that, all other relevant factors being equal,* some sera were more efficient than others.

Whether we need the more exact probability taken from the larger tables is rather a matter for the individual to determine. If P is less than 0·01—i.e., one in a hundred—then we may perhaps be content to say, without finding any more accurate probability, that the departure from uniformity is an unlikely event to occur by chance. Many statisticians, as pointed out in the last section, take $P = 0\cdot05$ as a conventional level of significance—i.e., if P is greater than 0·05 then the observed values do not differ from the expected values by more than might reasonably be ascribed to chance, while if P is less than 0·05 then it is likely that they do differ by more than might be ascribed to chance. The smaller the value of P the smaller clearly is the probability that the differences noted are due to chance.

THE HOURLY DISTRIBUTION OF BIRTHS

In Table X distributions are given of a series of live and stillbirths according to the time of day at which they took place. With live births the figures suggest that a high proportion of the total take place during the night and a smaller proportion during the early afternoon and evening. With stillbirths rather the reverse appears to be the case, the proportion during the night is somewhat low while in the morning and afternoon the number i rather high, though the differences are not very uniform Are these differences between the numbers recorded at the various hours of the day likely to have occurred merely by chance in samples of the observed size ? On the hypothesis that they have occurred by chance, that live and stillbirths are both distributed evenly over the day, the number of live births in each three hourly period should be 4028 and the number of stillbirths 159 (32,224 − 8, and 1272 − 8) These are the expected values on the hypothesis of uniformity

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[1] These tables are so constructed that they must be entered with $n + 1$ instead of with n.

TABLE X—*Distribution of Live and Stillbirths over the Day*

Time interval	Number of live births observed	Observed number—expected number	Number of still births observed	Observed number—expected number
Midnight–	4 064	*+36*	126	*−33*
3 A M –	4 627	*+599*	157	*− 2*
6 A.M –	4 488	*+460*	142	*−17*
9 A M –	4 351	*+323*	195	*+36*
12 noon–	3 262	*−766*	150	*− 9*
3 P M –	3 630	*−398*	178	*+19*
6 P M –	3 577	*−451*	144	*−15*
9 P M –midnight	4 225	*+197*	180	*+21*
Total	32 224	0	1272	0

For each distribution, live and stillbirths, eight values of ((observed–expected) ^{2} — expected) have to be calculated Their sum is χ^2 With live births χ^2 equals 413 0, with stillbirths it is 23 8 (It may be noted that as the expected value is the same throughout, the quickest way of calculating χ^2 is to sum the squares of the (observed–expected) values and divide this total by the expected number, instead of making separate divisions by the expected number in each instance) In both sets of data $n=7$, for one value is dependent upon the total of the expected births having to equal the total of the observed births In both cases the χ^2 table shows that P is less than 0 01 The differences from the uniformity that we presumed ought to be present are therefore more than would be ascribed to chance, and we conclude that neither live nor stillbirths are distributed evenly over the twenty four hours in these records The differences of the live births from uniformity are more striking than those of the stillbirths, for they show a systematic excess during the hours between 9 P M and 12 noon and a deficiency between 12 noon and 9 P M , with the stillbirths there is some change of sign from one period to another which makes the differences from uniformity less clearly marked—perhaps due to the relatively small number of observations Inspection of these differences themselves adds considerably to the information provided by χ^2 The latter value tells us that the differences are not likely to be due to chance , the differences themselves show in what way departure from uniformity is taking place, and may suggest interpretations of that departure

INTERPRETATION OF THE ASSOCIATIONS FOUND

It must be fully realised that χ^2 gives no evidence whatever of the *meaning* of the associations found For instance in Table VIII the value of χ^2 was such that we concluded that the intelligence and the state of nutrition of a group of children were not independent The interpretation of that association is quite another matter We cannot say offhand that the state of nutrition *affected* the level of intelligence Possibly those children who fell in the group with low intelligence had more instances of subnormal nutrition because intelligence is an inherited characteristic and parents of low intelligence may feed their children inefficiently Similarly one measles serum may have "prevented" measles to a greater extent than another not because of its superior efficiency but because the children to whom it was administered had in fact been less exposed to risk of infection. We need to be satisfied that the children were effectively equivalent in other relevant respects The value of the χ^2 test is that it prevents us from unnecessarily seeking for an explanation of, or relying upon, an "association" which may quite easily have arisen by chance But if the association is not likely to have arisen by chance we are not thereby exonerated from considering different hypotheses to account for it If we use some form of treatment on mild cases and compare the fatality experienced by those cases with that shown by severe cases not given that treatment, the χ^2 value will certainly show that there is an association between treatment and fatality But clearly that association between treatment and fatality is only an indirect one We should have reached just the same result if our treatment were quite valueless, for we are not comparing like with like and have merely shown that mild cases die less frequently than severe cases Having applied the sampling test we must always consider with care the possible causes to which the association may be due

It must be observed also that the value of χ^2 does not measure the *strength* of the association between two factors but only whether they are associated at all in the observations under study Given sufficiently large numbers of observations the test will show that two factors are associated even though the degree of relationship may be very small

THE "FOURFOLD" TABLE

With what is known as a fourfold table—i.e , one with four groups in it—χ^2 may be calculated by means of the expected numbers, in the way previously illustrated, or alternatively from the formula

$$\chi^2 = \frac{(ad-bc)^2\,(a+b+c+d)}{(a+b)\,(c+d)\,(a+c)\,(b+d)},$$

where a, b, c, and d are the numbers falling in the groups and the additions are the totals in the margins, as in the Table below

—	Number of individuals—		Total
	Inoculated	Not inoculated	
Number of individuals attacked	*a*	*c*	*a+c*
Number of individuals not attacked	*b*	*d*	*b+d*
Total	*a+b*	*c+d*	*a+b+c+d*

n in this case is only 1 since when one expected value has been found the remainder can be found by subtraction The χ^2 table is therefore consulted with $n=1$ and the value of χ^2 found from the observations

If the numbers involved are small the value of χ^2 will be more accurately given by the formula:

$$\chi^2 = \frac{\left(ad - bc - \tfrac{1}{2}(a + b + c + d)\right)^2 (a+b+c+d)}{(a+b)(c+d)(a+c)(b+d)}$$

where *ad* is the bigger of the two cross products (a correction due to F. Yates).

For instance suppose the Table is as follows:—

—	Inoculated	Not inoculated	Total
Attacked	10	65	75
Not attacked	30	95	125
Total	40	160	200

The larger cross product is 30 × 95. For χ^2 we therefore have

$$\frac{\left(95 \times 30 - 10 \times 65 - \tfrac{1}{2}(200)\right)^2 \times 200}{40 \times 160 \times 75 \times 125}$$

and $\chi^2 = 2·7$. For $n = 1$ and $\chi^2 = 2·7$ P is 0·10, so that the difference between the inoculated and uninoculated is not more than might be expected to occur by chance (10 times in 100 tests would we reach so large a difference by chance). Without the correction $\chi^2 = 3·33$ and P is 0·07, which rather exaggerates the association. This is the value we should also reach if we made the calculation by means of the expected values. In this case we should argue that according to these figures the chance of being attacked is 75/200. The chance of being inoculated is 40/200. The chance of being an inoculated *and* an attacked person if the two characteristics are independent (our testing hypothesis) is then (75/200 × 40/200). This is the chance for each of the 200 individuals observed. Therefore the number we should expect to see in the inoculated attacked cell on this hypothesis of independence is 200 times the probability or 200 (75/200 × 40/200) = 15. It will be noted that the actual number (10) is rather less than the expected number. The difference between these observed and expected values is 5, its square is 25, and dividing by the expected number the contribution of this cell to χ^2 is 1·66. The other expected values can be similarly calculated (or by subtraction from the marginal totals) and their contributions to χ^2 computed. χ^2 then equals 1·66 + 1·00 + 0·42 + 0·25 = 3·33 as above.

These results could, of course, be equally well tested by means of the formula for the standard error of the difference of two proportions. 25 per cent of the inoculated and 40·6 per cent of the uninoculated were attacked, a difference of 15·6 per cent. The standard error of this difference is, as previously shown,

$$\sqrt{\frac{37·5 \times 62·5}{40} + \frac{37·5 \times 62·5}{160}} = 8·6$$

(where 37·5 is the percentage attacked in the total group). The difference is not twice its standard error and therefore cannot be regarded as an unlikely event to occur by chance.

THE ADDITIVE CHARACTERISTIC OF χ^2

One further characteristic of χ^2 is useful in practice. Suppose we had three such tables as the above showing the incidence of attacks upon different groups of inoculated and uninoculated persons, observed, say, in different places, and each table suggests an advantage to the inoculated but in no case by more than could fairly easily have arisen by chance—e.g., the χ^2 values are 2·0, 2·5, and 3·0, and with n equal to 1 in each case, the P's are 0·157, 0·114, and 0·083. The systematic advantage of the inoculated suggests that some protection is conferred by inoculation. We can test this uniformity of result, whether taken together these tables show a "significant" difference between the inoculated and uninoculated, by taking the sum of the χ^2 values and entering the χ^2 table again with this sum and the sum of the n values—namely, $\chi^2 = 2·0 + 2·5 + 3·0 = 7·5$ and $n = 3$. P in this case is slightly larger than 0·05, so that we must still conclude that the three sets of differences, though very suggestive, are not quite beyond what might fairly frequently arise by chance in samples of the size observed.

Finally it must be noted that χ^2 must always be calculated from the *absolute* observed and expected numbers and never from percentages or any other proportions.

SUMMARY

The χ^2 test is particularly useful for testing the presence or absence of association between characteristics which cannot be quantitatively expressed. It is not a measure of the strength of an association, though inspection of the departure of the observed values from those expected on the no-association hypothesis will often give some indication, though not a precise numerical measure, of that degree. As with all tests of significance the conclusion that a difference has occurred which is not likely to be due to chance does not exonerate the worker from considering closely the various ways in which such a difference may have arisen. In other words, a difference due to one special factor is not a corollary of the conclusion that a difference is not due to chance. There are a number of ways in which the value of χ^2 can be calculated, some speedier than others. An alternative method is given for fourfold tables and a correction in such instances for small samples. The calculation of χ^2 must always be based upon the absolute numbers. In this discussion the mathematical development of the test and the foundation of the table by means of which the value of χ^2 is interpreted in terms of a probability have been ignored. The test can be applied intelligently without that knowledge, provided the rules for calculation of the values of χ^2 and n are followed, and the usual precautions taken in interpreting a difference observed.

A. B. H.

ALVARENGA PRIZE.—The College of Physicians of Philadelphia will award the Alvarenga prize, amounting this year to $200, on July 14th to the author of the best essay submitted on any branch of *medicine*. Essays must be original unpublished contributions and should be typewritten in standard English, or be accompanied by an English translation. Each essay must be sent without signature but must be plainly marked with a motto and be accompanied by a sealed envelope having on the outside the motto of the paper and within the name and address of the author. They must reach the secretary of the college, 19 South 22nd-street, Philadelphia, before May 1st.

The Alvarenga prize for 1936 has been awarded to Dr. Harry Eagle, passed assistant surgeon, United States Public Health Service, who is at present stationed at the Johns Hopkins Hospital. Dr. Eagle's essay dealt with the present status of the blood coagulation problem.

SPECIAL ARTICLES

USE OF CERTAIN COAL-TAR NAPHTHA DISTILLATES FOR THE DESTRUCTION OF BED-BUGS*

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A number of experiments both in the laboratory and the field have been carried out which show that the vapour of certain coal tar naphtha distillates is lethal to the bed bug (*Cimex lectularius* Linn) Toxicity experiments have also been carried out by Dr G R Cameron at University College Hospital medical school, London, and these tests have shown that animals kept for prolonged periods in an atmosphere saturated with the vapour have not been injuriously affected in any way and afford some considerable assurance that no danger to man from this cause is to be apprehended

A method for applying these naphtha distillates to the disinfestation of houses has been developed and consists essentially in spraying the walls and ceilings of rooms which have previously been made gas tight by any of the usual methods of sealing Special attention is given to likely harbourages such as skirting boards and architraves, a high pressure hand syringe being used for spraying such harbourages Gas masks with a suitable filter are worn during the process

To ensure satisfactory results it is important that sufficient vapour concentration be maintained and for this purpose fumigation should not be begun at a temperature of less than 60° F It is an advantage to work as much above this temperature as is practicable

The quantity of naphtha used in the experiments is on the basis of 1 gallon per 750 cubic feet of room space The rooms are kept sealed for 18–24 hours and at the end of this time are rapidly ventilated by opening doors, windows, fireplaces, &c The vapour clears very quickly and it is possible to enter a room after a few minutes' ventilation without experiencing any discomfort It has moreover been shown that there is no tendency for a concentration of vapour to "build up" if after ventilation the doors and windows are again closed for several hours

The desirability of a high initial temperature is emphasised and only in very hot weather with air temperatures of 70°–80° F should preheating of houses be dispensed with In the experiments a very effective paraffin stove working on the Primus principle has been used, but in any case sufficient time must be given to warm walls, ceilings, &c , thoroughly Owing to the inflammable nature of the naphtha, fires or other sources of heat must be extinguished and if portable removed from the rooms before fumigation is started and smoking and the use of naked lights must be prohibited whilst the naphtha is being handled in any way

The experiments indicate that after a house has been warmed it is advisable in most instances to spray the roof space before the rooms are treated

Successful results have been obtained in the disinfestation of upwards of 200 houses and flats of varied constructional detail Failure has been reported in a few cases but this we think has been incidental to the development of a suitable technique for applying the naphtha After fumigation for 24 hours dead bugs will sometimes be found on the floors, but usually they will be found dead in their customary hiding places—e g , behind skirting boards, picture rails, &c

The naphtha used is derived by the distillation of coal tar and consists of a complex mixture of aromatic hydrocarbons and associated bodies, and the constituent or mixture of constituents which is toxic to the bed bug is not known The following specification has been drafted to govern the supply of coal tar naphtha as used in these experiments

SPECIFICATION FOR HEAVY COAL-TAR NAPHTHA

1 *Colour* —Shall not be darker than a freshly prepared *solution of 1 0 ml of N/10 iodine in 1000 ml of distilled* water

2 *Specific gravity* —Not less than 0 835 and not greater than 0 910

3 *Water* —Shall be free from water and other visible impurities at 15 5° C

4 *Distillation range* (method as defined in B S I specification No 479 for coal tar naphthas) —Up to 160° C not more than 5 ml Up to 190° C not less than 90 ml

5 *Flash point (Abel)* —Not less than 105° F

6 *Tar acids and tar bases* —Not more than 0 25 per cent of tar acids and 0 25 per cent of tar bases

Further research into various aspects of the question of the use of heavy coal tar naphthas for the destruction of bed-bugs is in progress and new methods for more effective application are in course of development

As will be seen from these preliminary notes, the use of coal tar distillates for the destruction of the bed bug is still in the experimental stage, but the results so far achieved are promising and indicate that further research on these lines may produce valuable results

As was to be anticipated, failures have occurred—not, however, owing to defects in heavy naphtha as a toxic agent for destruction of bed bugs but owing to defects in the methods of employing it for that purpose If, therefore, those responsible for the management of house property adopt this method of treatment for eradication of bed bugs, *it is important* that they should realise that the technique of fumigation with heavy naphtha is still the subject of test and research and that the cause of any failure is first to be sought in the method used. In the event of failure, the circumstances of the particular case should be carefully investigated, especially in regard to the temperature at the time of fumigation, to the sealing of the premises, and to the distribution of the vapour

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* Abstract of a report to the Bed bug Infestation Committee of the Medical Research Council

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Queen's District Nursing Association, Guildford —Queen Mary will perform the opening ceremony of the new nurses hostel and the new maternity home and antenatal clinic of this association on April 1st The buildings which have been erected at Stoughton, near Guildford, and are almost complete, have cost £16 000 The maternity home and equipment are the gift of Sir John and Lady Jarvis

MEDICINE AND THE LAW

Incomplete Tonsillectomy

An instructive case in the West London County Court last week arose out of a complaint that a surgeon had been negligent in the removal of tonsils A five year old boy living in Fulham was taken by his parents last July to the Victoria Hospital for Children in Tite-street Chelsea The parents alleged that the surgeon who operated instead of taking out the tonsils merely clipped off a small piece and left the major part in the throat The tonsils it was said were in a septic condition proper removal would have cured the child the incomplete operation opened up the part which remained to infection and a serious illness of nine days followed the tonsils being ultimately removed by the dissection method at the Princess Beatrice Hospital nearly four months later The medical attendant who saw the child a few days after the first operation gave evidence that the tonsils were then still there and were inflamed Asked if he suggested that it was possible for a surgeon to remove the tonsil completely in every case, he replied it is possible in every case The defendant surgeon stated that he had performed nearly 18 000 such operations The child had very large tonsils which almost met He used the guillotine method The part which he removed was so big that he did not think anything had been left he saw no remnant Judge Hargreaves decided in favour of the surgeon A medical practitioner does not contract to perform a cure; he merely undertakes to use such reasonable care and skill as will be expected of a man of his professional standing Was it negligence to use the guillotine method? The defendant, who demonstrated this method to the judge with the aid of the instrument said that it obtained complete removal in almost every case and it was a recognised method used in almost every clinic and hospital in London The judge evidently accepted the opinion that the method was proper Whether or no the evidence for the plaintiff conveyed the impression that tonsillectomy was a simple operation wherein no competent surgeon could ever fail to effect a complete removal nothing in the judgment supports the view that failure to effect complete removal must necessarily amount to negligence and must involve payment of damages

A Lapse of Memory

An incident discussed at a recent inquest in Chester—the omission to order an ambulance—was explained by a medical witness as due to the overworking of doctors at the time Their surgeries were crowded The coroner agreed that the doctors had been very busy indeed they had been almost run off their legs and allowance must be made in the circumstances The inquest concerned the death of a man aged 78 in an ambulance on the way to hospital The patient fell ill but refused to have a doctor His landlady however sent for the doctor one Saturday The doctor said he was so busy that he might not be able to come till the Monday As he did not come by the Tuesday she called again and the doctor's assistant visited the patient on the Wednesday At a second visit on the following Saturday the assistant said the patient ought to be removed to hospital The landlady went to the doctor that evening for a note for the hospital. She waited an hour for the doctor to come in from visiting patients but failed to see him Her son eventually got the note for the hospital but no ambulance arrived Next day the patient got up and dressed to be ready to go to hospital but still no ambulance arrived. The landlady's son went to the doctor's surgery and found that the ambulance had never been ordered It arrived at last at 10 30 A.M The patient apparently walked downstairs to the ambulance He died before the hospital was reached, from cardiac failure due to bronchial pneumonia The coroner naturally felt bound to investigate the omission to order the ambulance and also the question of the patient's fitness to be moved. He recorded a verdict in accordance with the medical evidence observing that the omission was unfortunate, but adding that these failings of memory did sometimes happen and indeed in moments of great pressure could easily occur

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VIENNA

(FROM OUR OWN CORRESPONDENT)

ALARMING DECREASE IN THE FERTILITY OF VIENNA FAMILIES

According to the statistical report of the Official Bureau of Health of Vienna the deaths each month outnumber the births by over a thousand. This deplorable condition is explained by the fact that out of the marriages of the ten years 1924–33 no less than 53 per cent. have so far been childless and even in the remainder the number of children has decreased In 1890–1903 only 10 per cent of the married couples were childless there were 22 5 per cent in 1904–13 and in the upheavals of 1914–23 the figure went up to 30 per cent Again in 1890–1903 more than 30 per cent of the parents had three or more children in 1904–13 there were only 21 per cent while in 1914–23 only 10 per cent. had two or more offspring and in the last decade this figure fell to 3 per cent The one child family has not suffered such serious changes for in 1890 24 per cent of the couples had only one child in 1914–23 the figure stood at 37 per cent and now it is 35 per cent Two child families prevailed in the period 1890–1903 in about 25 per cent of all families, but since 1924 only in 9 per cent

The picture is similar when the number of school children in Vienna is considered. Last year the total number of schools in this city has gone down by 205 to 3585 the number of pupils was 123 061 (a drop of 8331) in the public schools and 10 313 (400 less) in private schools These figures apply only to school-children aged 6–14 of whom in all we have now 24 000 less than four years ago Another result of the serious decrease of young people in the population is the lack of juvenile labourers apprentices clerks and shop assistants in the age group 16–25 According to census figures juvenile labourers amounted to 44 6 per cent in 1910 and dropped to 24 per cent in 1934 The situation is even graver amongst the commercial and office employees where the figure dropped from 13 per cent to 5 7 per cent. Of course this is not due only to the decrease in young people but also to the economic crisis in this country; it is however a characteristic feature of the increase in the elderly population But if economic recovery should take place in a couple of years or so there will be a great dearth of the necessary juveniles

BLOOD PRESSURE PULSE AND RESPIRATION RATE IN CHILDREN

Speaking before a recent meeting of the Vienna College of Physicians Dr Helmreich described an investigation into various normal readings in children of different ages A normal pulse rate is 120 in the first year of life, it is 112 in the second year, 107 in the third, 99 in the fifth, 90 in the eighth, and then it drops by 2 beats a minute for every year to the fifteenth when 76 is about the normal average, decreasing to 72 in the adult The individual variation in these averages is much greater among children than among adults Exercise increases the pulse rate in children much less than in adults A useful test can be applied by making them sit up from a prone position ten times This has been found to increase, on an average, the pulse rate of a four-year old child by 9 beats per minute, by 7 beats at six, 12 beats at eight, 16 beats at twelve, and 18 beats at fifteen In adults this exercise gives an increase of about 12 beats

The respiration rate of a healthy baby of one year is on an average 30 per minute, it is 26 at five, 20 at eight, 18 at ten, and 16–18 in the adult Normal respiration is more easily disturbed in infants than in adults The effect of exercise also varies at different ages, instances being noted where an increase of 8 per minute took place, while other children, owing to deep breathing, showed a decrease of 4 Systematic observations of the systolic blood pressure shows it to stand at about 84 mm Hg up to the sixth year, it is 90 mm at ten, 100 mm. at twelve, and reaches the adult figure of 120 at fifteen Similarly the diastolic pressure of children up to ten is about 62 mm, 70 mm at fifteen, and about 80 mm in the adult Moderate exercise increases the blood pressure of the adult by 20 mm, intensive activity by 40–50 mm This increase is however very irregular in children, so that no normal or average values can be stated

THE FIRST RADIOTHERAPIST

Forty years ago, on Jan 15th, 1897, Dr (now Prof) Leopold Freund, who had taken up here the study of Röntgen's new discovery, demonstrated before the Vienna Medical Society the first patient ever treated by X rays, and he thus inaugurated X ray therapy Freund's patient and exact observations have therefore called into existence a therapeutic procedure which is no less important than the diagnostic value of X rays, and which has become an indispensable part of medicine This first patient had a hairy mole of enormous extent, and it is remarkable that even in this first case Dr Freund used the method of protracted fractionated irradiation, which has survived every other method that has been brought forward in the 40 years of its existence Prof Freund's second therapeutic achievement was the application of X rays in tuberculosis, at first to the skin, then to bones and joints, and finally to the testes In parenthesis it may be stated that Coutard's method of radiotherapy now used extensively for tumours of the respiratory tract is based on Freund's original principle The Vienna Medical Society as well as the Austrian Roentgen Society commemorated the historic day by special festival meetings, and Prof Freund was the recipient of numerous honours from all parts of the world—except from Germany The reasons are obvious—he does not belong to the "German" race

MORTALITY STATISTICS FOR 1935

From an official report of the statistical office we learn that of the deaths in Austria 17 per cent males and 21 per cent females were from diseases of the circulatory organs, 12 3 per cent and 14 5 per cent from neoplasms, 9 6 per cent and 7 9 per cent from tuberculosis, and 8 6 per cent and 8 3 per cent from pneumonia Taking 100,000 of the population as a unit, we find that the mortality has gone down nearly in every respect For the circulatory system it fell from 234 four years ago to 231 per 100,000 living, for tuberculosis in males it fell from 141 5 to 128 5, in females from 100 8 to 93 4 Even the suicides show a decrease, 59 3 males falling to 53 9, and 25 8 females to 24 3 Only the deaths from cancer show an increase 164 1 against the 157 3 of 1931, in males only

CONTRIBUTORY SCHEMES

SINCE the opening of the new premises of the Royal Empire Society in Northumberland-avenue at the end of last year there has been a remarkable development of its numerous activities Among them is the formation of a group of members specially concerned with social services On Feb 18th Sir Francis Morris presided over a meeting when Mr F B Elliot, the general secretary of the Hospital Saving Association, gave an account of the development of contributory schemes By the establishment of an organisation independent of the hospitals, though working closely with them, the objections of the medical profession to anything in the nature of a contract had been overcome The funds raised through these organisations were an increasingly important factor in the finances of voluntary hospitals and would be even more so if the example of employers in Sheffield in adding one penny a week to the contributions of their employees were followed in other parts of the country Mr Elliot claimed that by providing a common voucher for council and voluntary hospitals the contributory schemes were assisting in the coördination of hospital services In the thirteen thousand groups of the Hospital Saving Association there is a large body of voluntary service through which is being developed a new interest in and understanding of hospital work Mr C E A. Bedwell, house governor of King's College Hospital, speaking as a life fellow of the society, directed attention to the possibility of extending this method of support for the voluntary hospitals to other parts of the British Empire At present the principal example of a flourishing contributory scheme is in the State of New South Wales This is particularly interesting as legalised sweepstakes and other speculative methods of raising money have been tried there and found wanting In four years the Metropolitan Hospitals Fund in Sydney has enrolled over two hundred thousand contributors with an income for the last financial year of over £175,000 showing an increase of £50,000 on the previous year The Minister of Health, the Hon H P FitzSimons, had congratulated the hospital secretaries at this last conference on the way in which they had handled the contribution scheme

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INTERNATIONAL UNION AGAINST TUBERCULOSIS—At a recent meeting of the executive committee of the International Union against Tuberculosis in Paris, it was agreed that the tenth conference (which should have taken place in Lisbon in last September) should take place in September, 1937, if possible in Lisbon The final decision, however will not be taken till the end of April or the beginning of May It was also decided that the eleventh conference of the Union should meet in 1939 instead of 1938, in Berlin The members of the committee expressed their gratitude to the Italian Government for having placed at their disposal six scholarships at the Carlo Forlanini Institute in Rome

POWICK HOSPITAL, WORCESTER—On Feb 15th a new treatment centre was opened at this mental hospital The centre has cost £6000 and includes an operating theatre, an X ray department, and a dental room The proportion of recoveries has increased from an average of 25 per cent for the five years ended 1925 to 42 6 per cent for the five years ended 1935

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month his name can be seen later in the half yearly index

FROM A RUSTICATING PATHOLOGIST *

I

THE paper this morning tells me that my old tutor is dead, and it makes me think again of all I owe to the personalities that I have had the luck to be in contact with. I was I think the only man reading science in college and there was no science fellow to guide my studies and I suppose I was assigned to Phelps because he was a political economist with a special interest in the outcast and needy and a distinguished chairman of the Oxford Board of Guardians He must have been nearing 50 at the time, had an impressive beard, wore a straw hat through the winter and lunched daily off a rice pudding He told me that of course he knew nothing about the available lectures and classes in natural science and that I had better go to the museum to a man called Burdon Sanderson and ask him what I had better do meanwhile would I write him an essay on—I forget what but it would be party government or is the good always the beautiful? or something of that sort—and bring it to him next Tuesday night at 9 o clock. And so for several years I spent an hour or an hour and a half with him each week reading him the essays of a very crude boy and listening to his talk talking was his specialty in life and he was very good at it, and often enough my first few sentences would fire him off for the rest of the evening Once his friend York Powell came across from the House and I sat in the corner and heard such talk as I had never dreamed of. He took me for Sunday walks to Otmoor and over Wytham Hill and round the countryside, never emerging from college till 11 1 A M when everyone was safe in church never smoking in public, and always talking and trying to make me talk on questions which I had never known to exist and which had this only in common that they had nothing whatever to do with natural knowledge indeed, I do not think he had the least idea what science was about or took any interest in it But he was determined that I should not be lost in the horrid purlieus of the laboratories which Council said when suggestions were made to increase the lavatory accommodation in the physiology building already took men away from their colleges too much. He even made me write a prize essay on Raleigh—an essay for a prize I mean it did not get it—and one way and another he gave me one of the finest doses of education I have had from anybody which I remember gratefully when I help myself to brown sugar out of the beautiful little bowl he gave me for a wedding present.

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It would please my senile delight in reminiscence and bore everybody else if I were to go into details about the other teachers who did so much for me—Ray Lankester Burdon Sanderson J S Haldane James Ritchie Gustav Mann—and trying to practise the decorum on which the Rev Lancelot Ridley Phelps always insisted I mention only those who are dead and though it blunts my illustrations say nothing about those from whom I got nothing but knowledge. The men I remember were not necessarily good teachers in the ordinary sense; Lankester was the best lecturer I have ever heard, and Sanderson s lectures on what he called general pathology were frankly unintelligible though I fancy I could understand them now The pleasure and profit of being in contact with these men was in the atmosphere which was about them they emanated a sort of aura, and engendered the same kind of respect—affection seems almost a frivolous word—which instinctively sent up my hand to take my hat off in recent years when I met Karl Pearson in the street Being no psychologist I cannot analyse the aura but I think it depended on the fact that their minds were fixed on things in front which, in matters concerned with natural science are perhaps not very different from things above. They were of course full of learning but learning was to them of value only as a stepping stone to more learning and the lesson which their saintly lives (saintly perhaps only intellectually) preached to us young men was that we ought to do our best to know more about the world we live in before we died. Each in his own way they set us an example which we could not fail to admire even if our day dreams to follow it have come to very little. I have asked a number of men, more or less my contemporaries what chiefly impressed them in their undergraduate days at Cambridge Oxford, Edinburgh University College &c and what they brought away of best value and apart from the cynic who thinks it funny to say nothing they have all told me of personalities among their teachers—not the men of whom a few are scattered among university staffs who are notorious as buffoons or boors or inanities of some sort but the sanctified apostles of the progress of knowledge whom I have been trying to commemorate Men do not seem to remember classes or curricula they remember people

* * *

This gossip is I hope more relevant than it may seem to the teaching of medical students about which there has been so much discussion for at least the last 30 years and fortunately so little action The important thing is the personality of the teacher If he is to command the respect and attention of his students he must of course know his subject and he should know it in the right kind of way that is looking forward. To hand out the present state of knowledge as if it were a system of revealed truth may perhaps get men past jaded examiners but it is a travesty of education of university standard. Truth has several times been defined as that which opens up fresh fields to human curiosity it was indeed the apparent completion of the classical explanation of the world which made physicists question its validity and led to the modern revolution of thought about the constitution of matter The search for truth is a pilgrimage: we do not know where we are going but we know where we are at the moment and we know how we have got there and the impression made by the teachers I remember came from their being manifest pilgrims rather than spectators *Nullius in verba magistri* is a good enough motto in its way but it is palpable nonsense to apply the heuristic method to the whole of undergraduate teaching, and much of the instruction given must depend on authority, while students will listen to the authority of one who has been himself a pilgrim in a way which they will not accord to one who is simply a magnified version of themselves. This is indeed the reason why so much importance is attached in appointing university teachers to their interest in the personal pursuit of knowledge. People sometimes wonder that more stress is not laid on a man's capacity as a teacher by which they probably mean his facility for grouping current truth in rows and columns, and making lists which can be memorised without too much difficulty. We all—teachers and students—find these tricks useful, and a certain handiness in them is not to be despised, but unless the genuine fire is behind them they will leave the student very cold. Phelps had the fire in him—you could see it in his eyes—and if I failed to understand much of what he told me he made me warm.

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* The fourth and concluding article by "A Rover" in this series will appear in a subsequent issue —ED L.

* * *

Academic faith involves the preservation, collection, and transmission of knowledge, and of the three it is perhaps the first which is apt to be most neglected; a volume of THE LANCET of 50 years ago probably contains about as much that we do not know as the current issues, but they are not I fancy much used for miscellaneous reading partly perhaps because they are big and awkward to handle, while the weekly numbers may be taken in bed—ignoble but pertinent considerations. We cannot have seminaries of sound learning or education of more than second rate quality without scholarship and research—for I cannot any longer evade the use of that word though it has been so mauled in recent years that it becomes sometimes almost repulsive. Teaching needs research, and research so often needs teaching, that the proposals which have recently been made that they should be separated seem deplorably short sighted. The close connexion which has hitherto existed is fully justified on much more than historical grounds though we have now passed away from the time when anyone who wanted to do laboratory work has practically no alternative to getting a teaching appointment. Whole time research as a life's occupation is a new development and we do not know at present how it will work out in the long run. There are of course a certain number of men who have the flair for getting new knowledge and are temperamentally not suited to teach, generally because they are too shy and nervous, and certainly a class of undergraduates never ceases to be rather a terrifying proposition. And there are a few people who can live up to the novelist's idea of the great scientist who lives a solitary and remote life of meditation and experiment, and periodically startles the world with a cure for cancer or a voyage to the moon, or what not. But there are not many of them, and the successful investigator is generally a pretty ordinary kind of man who has a natural liking for mixing with his fellows. Where he differs from them is mainly in his curiosity and his capacity to see unexplained problems where other people will see nothing out of the way. Tea-time gossip once came round to Bayliss, probably soon after his death, and some one said, "Oh, Bayliss would have made a good research out of it if he had been a bus conductor," which always seemed to me to put a great truth very well; one likes to think of that lovable figure punching tickets and talking about it afterwards to the Physiological Society. And as to being professional meditators—well, I have asked a number of my friends who are more or less distinguished, and they one and all confess that they are quite incapable of sitting down and thinking, and that any ideas they may have had just come into their heads. There are too a certain number of investigations, especially those involving experiments, which actually need the whole of a man's working day though not necessarily all of his working days, and there is more of this kind of thing than there used to be because of the more elaborate scale on which inquiries are pitched nowadays—more elaborate that is on the physical side, not on the mental.

* * *

For these reasons a certain amount of whole time research is as essential as it is undoubtedly productive, but it has its drawbacks, and there could easily be too much of it. One of the most important things to encourage the progress of knowledge is first rate undergraduate teaching by men who have adequate knowledge to transmit the elements of a subject and have themselves a passion to reach out to the things which are in front. The student needs the intangible atmosphere, and at least as much the tangible information which will form the background for any curiosity he may himself develop. There are far too many people nowadays engaged in what they (and other people who ought to know better) are pleased to call Research who are woefully ignorant of the subject within which they are working; some of them actually get doctor's degrees from universities when they would certainly be ploughed in the bachelor's examination in the topic. A man is clearly unfit to engage in medical research without a really good all round knowledge of medicine and para medicine, or to pretend to advance bacteriology without knowing about as much of Topley and Wilson as the authors remember of their own book. And it is a great drawback of too much whole time research that some of the most desirable teachers are withdrawn from the teaching world. Look for example in London at the galaxy of talent and personality which is secluded in the Lister Institute and the National Institute at Hampstead; some of the staffs of these organisations are probably best where they are, but it seems a great pity that the London undergraduate has no chance of sitting under the most learned bacteriologist in the country or—well, perhaps I had better be proper rather than personal and not go into too many details. At any rate, the present position is not the most ideal either for teaching or research.

* * *

So far from deteriorating a man's research, a moderate amount of teaching would in many instances do it good. Just as he should suck up wide knowledge when he is an undergraduate, so he must keep his knowledge wide when he becomes a senior student, and if he spends most of his time at the bottom of his own well he is apt to miss what is going on. As a teacher he cannot neglect it. There is too nothing like teaching for getting one's ideas in order, especially elementary teaching, and the fallacies of traditional arguments are particularly liable to show themselves when they are being expounded in a milk and water form; the innocent questions of babes and sucklings, as yet untrammelled by convention, are also often illuminating and disconcerting in reminding one of what one does not but ought to know. Now this is just what the investigator needs. His natural curiosity has to be disciplined by circumspection if it is to be productive. Unsolved problems are as the hairs of his head, but the only ones worth attending to are those which can be posed in a soluble shape half the difficulty of finding the answer is overcome when the question has been asked in a proper form. He has to learn to be content to answer questions each one of which is in itself a small thing The pith of gaining new knowledge is indeed simplification which is the pith of teaching too Hence it is natural that the two go so easily together The researcher too has much to gain from the give and take of his colleagues in an active teaching school and when the time comes as it surely will, that his productive capacity is in abeyance for a while he can occupy himself with other things and feel that he has earned a good night s sleep What a miserable time the pure researcher must have when he feels that he is not justifying his salary and how much bad work such a mood may lead to! And if his fire has died out, as it sometimes will, what is he to turn to? For a restricted life of research or perhaps I should say a life of restricted research is no training at all for a teacher No teaching and research have natural affinities with one another and they should not lightly be put asunder apart from the necessities which I have mentioned. What most teaching schools need is funds for maintaining research which are at their own disposal and which they can use in their own way; they would make good use of them.

CORRESPONDENCE

RITUAL PURGATION

To the Editor of THE LANCET

SIR,—Doubtless the interesting amusing stimulating and provocative article by my friend Prof Witts on Ritual Purgation in Modern Medicine will bring a spate of letters to your box. In this iconoclastic lucubration with which I am largely in agreement he pays me the doubtful compliment of quoting me in derision. I would ask is there any physician who has not had the experience of being called to a case of pneumonia on the fourth or fifth day to find the abdomen grievously distended, and to hear that the bowels have not been properly opened since the beginning of the illness and to wonder what is the best thing to do?

I am not unduly influenced by the eloquent persuasiveness of a Metchnikoff or the enthusiasm of an Arbuthnot Lane, but I do think that a loaded colon tends to abdominal distension and is therefore better emptied at the beginning of an illness I admit that ritual stuffing with unwanted foodstuffs is a contributory cause of distension but I must not embark here on a fresh iconoclasm.

I am Sir yours faithfully

F G CHANDLER.

Park-square West N W Feb 22nd.

To the Editor of THE LANCET

SIR,—I was very much interested in Prof Witts s paper on ritual purgation and in his plea for the avoidance of the bed pan whenever possible In this connexion is there any sound reason for insisting on the bed pan for a healthy woman after a normal confinement? There must be few patients who can survive even a short spell of bed pan existence without losing any normal habit of bowel action which they may have had To quote an excellent text book of obstetrics a daily aperient will probably be required whilst the patient is in bed and this is probably a conservative estimate

If we hope by forbidding even the daily use of the commode to avoid strain and such sequelæ as prolapse surely our results do not justify us The perineum is quite as likely to be soiled on the bed pan and where aperients are given stools are more liable to be fluid

It would be interesting to know from what danger we are protecting our patients when we insist in the ritual of bed pan and frequent purgatives for these normal people

I am, Sir yours faithfully

Oxford Feb 23rd V SMALLPEICE

SURGICAL TREATMENT OF CARDIAC ISCHÆMIA

To the Editor of THE LANCET

SIR,—It would indeed have been misleading if cardio-omentopexy had been already performed upon the patients mentioned by Sir Maurice Cassidy in your issue of Feb 20th Such a contingency emphasises the new responsibility imposed upon those to whom such patients come for advice After seeing the cases of cardiac ischæmia treated by omentopexy shown to the clinical section of the Royal Society of Medicine, I find it hard to believe that these patients could be convinced that their improvement was not due to the operation After all it is natural though illogical, that a patient who has had the courage to submit to an operation should credit it with his relief from symptoms Such patients are not likely to stem the spate that Sir Maurice fears It is surely the duty of the physician to guide the flood into the appropriate channels.

If as I assume from his quotation of Lord Dawson s words Sir Maurice holds that recovery from arteriosclerotic heart failure is the result of a compensatory circulation the physician is faced with the delicate problem of balancing the probabilities of the natural development of this circulation against the hazards of assisting nature s methods by operation and Mr O Shaughnessy has shown convincingly that the operation he has devised can do this.

I am Sir yours faithfully

Hull Feb 22nd HAROLD UPCOTT

ARTIFICIAL PNEUMOTHORAX ON STATISTICAL TRIAL

To the Editor of THE LANCET

SIR,—Dr Andrew Morland in his letter in THE LANCET of last week objects to the comparisons made in the inquiry into the value of artificial pneumothorax carried out by the subcommittee of the Joint Tuberculosis Council. His argument is that the control group consisted of patients with a substantially better prognosis when treated conservatively than the A.P group and that therefore no conclusions could justifiably be based upon the relative survival rates Whether that argument in the particular case is just or not is a matter for the authors of the report to discuss But Dr Morland passes from this criticism of the particular to a criticism of the general and says that the investigation raises the whole question of the applicability of statistics to clinical problems That question concerns me closely because I am at present endeavouring to show in your columns how simple statistical methods can be applied with advantage to many clinical problems

I am inclined to agree with Dr Morland that in assessing the value of A.P it may be very difficult *now* to find two equivalent groups of patients, one so treated, the other not, which are the requirements for an effective comparison (the subject was ably discussed by F J Bentley in his report on the L C C experience published in the *Spec Rep Ser med Res Coun*, *Lond* No 215, 1936) But was it *always* so *difficult*? In the early days of the treatment it was certainly not universally applied to all those patients who to day might be regarded as suitable subjects Some clinicians would in those early days have induced an A P where others would not If while the treatment were in that experimental stage, the clinical trials had been efficiently planned and organised, then, I believe, a measure of its value would have been obtained The statistical method (like any other method) must fail if it has to be applied to faulty material, but faulty material is the product of a faulty experiment The time for a test of a new method of treatment is clearly in its early days when opinions upon it differ, and equivalent patients, treated and untreated, are available for study Too often that critical moment is lost and we fall back later upon second best comparisons

Dr Morland says that there is now "a relatively small group of patients in whom pneumothorax is tried without delay as experience has taught us that their prognosis will be much improved thereby" That conclusion is itself statistical even though it is not given numerical expression. It must be based upon a mental, subjective, comparison, of similar types of patients to whom A P T was applied or not applied. The two groups must have existed, the clinician must have been able to define them as of similar type to reach the conclusion, is it too much to believe that if the critical moment had been seized an objective, numerical assessment could have been obtained by suitable statistical methods?

I am, Sir, yours faithfully,

A BRADFORD HILL

London School of Hygiene and Tropical Medicine
Keppel street, W C Feb 22nd

MEDICAL PRIVILEGE

To the Editor of THE LANCET

SIR,—The introduction into the House of Commons of Sir Ernest Graham Little's Bill for the protection of medical practitioners has brought to public notice a very important question—namely, the position of doctors as regards the secrecy of communications with their patients

The Bill was rejected on two main grounds first there was no statement as to whose privilege the privilege claimed should be, and secondly there was no definition of such privilege I think it is very important that the matter should not be lost sight of and that it should be brought up again as soon as possible I should suggest that the new Bill should be settled after careful legal consultation and should provide (1) that the privilege should be the privilege of the patient, and (2) that the patient should have as regards his medical attendant the same privilege as a client has in regard to his solicitor I think this mode of dealing with the matter would get over a considerable amount of difficulty in the way of definition

I am, Sir, yours faithfully,

JOHN J WITHERS

Howard House, Arundel street
Strand W C Feb 23rd

TREATMENT OF FRACTURE OF THE NECK OF THE FEMUR

To the Editor of THE LANCET

SIR,—May I reply through your columns to some of the points raised by Mr Gissane in his friendly criticism of the technique I described for the introduction of a Smith Petersen nail?

Mr Gissane agrees that traction in a Thomas splint should be the routine method of preliminary treatment and can effect accurate reduction When this is so, therefore, it seems a thousand pities to undo this good work by removing the extension and starting all over again with an orthopædic table if an alternative "bed procedure" can be offered, which is satisfactory Accepting the criterion of satisfaction as (1) accuracy of reduction, and (2) maintenance of this reduction until the nail is in position, the bed technique described fulfils these two requirements Accuracy of reduction must, of course, be controlled by radiograms in two planes, and may be confirmed with advantage immediately prior to operation after the spinal anæsthetic has been given Within five minutes of this the guiding wire can be in position, and as no disturbance of the weight extension has taken place, there is no reason to suppose that the simple introduction of a wire can have caused displacement At this stage, however, there is nothing to prevent as close a radiological control as the surgeon desires, given a good portable X ray apparatus, and lateral radiograms could be taken until sufficient experience of cases gives conviction that the instrument does in itself ensure complete control.

In introducing the nail over the wire inserted right through into the head of the femur, I find it difficult to conceive that the head fragment lying in the acetabulum can move Any movement that could occur must surely be on the part of the proximal fragment of neck, and attached femur with it, and the immobility of this is guaranteed by the weight extension supplemented by the wire Maintenance of reduction is thus sustained until the nail is in position

Finally, if the experience of others should prove the same as my own, they will find that the elderly patients have no fear of what is to them a "bedside treatment" compared with a visit to the theatre for an "operation,' where events that may be no worse than tedium for the surgeon and his assistants are no less than an ordeal for the patient

I am, Sir, yours faithfully,

E T BAILEY

St Leonard s Hospital Hoxton street N, Feb 20th

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Capts K. H Hole O B E, to *Drake* for R.N Hosp, Plymouth and G G Vickery, O B E, to *Victory*

Surg Comdr R G Anthony lent to N Z Division for three years

Surg Comdrs A J Tozer to *Wildfire*, H Hurst to *Lucia*, D M Beaton to R N Hosp, *Plymouth*, and A W Cocking to *Pembroke* for R N B

Surg Comdr (D) H J Luck to *Victory*

Surg Lt Comdr (Royal Australian Navy) C A Downward to *President* for course

Surg Lt Comdrs C T Hyatt to *Drake* for Devonport Dockyard F Dolan and F W Besley to *Drake* for R N B T L Cleave and T G B Crawford to *Pembroke* for R N B, and J J Keevil and D A Newbery to *Victory* for R N B

Surg Lt Comdr (D) O J Barrable to *Pembroke* for R.N.B

Surg Lts C V Harries to R.N Hosp Malta and H de B Kempthorne to R N Hosp Cape of Good Hope

Miss B M Martin R R C Matron at the R N Hosp Plymouth has been appointed Matron in Chief Queen Alexandra s R.N Nursing Service on the retirement of Miss C C Renwick, R R C to date March 10th

ROYAL NAVAL VOLUNTEER RESERVE

Surg Lt Comdr (D) D MacGregor placed on the Retd List

Surg Lts D M Dean and G H Sellers to be Surg Lt Comdrs

Surg Lts A F Griffiths to *Pembroke* for R.N B F T Land to *Iron Duke* and P M. Inman to *Victory* for R.N.B

ROYAL ARMY MEDICAL CORPS

Capt J H Anderson to be Maj

Short Service Commissions —Lt (on prob) E W O Skinner is secd under the provisions of Art 213 Royal Warrant for Pay and Promotion, 1931

R. D Menzies, from Supp Res of Off R.A.M C. to be Lt (on prob)

ROYAL AIR FORCE

RESERVE OF AIR FORCE OFFICERS

Flight Lts relinquishing their commissions on completion of service : M Clancy and L. O Connor

INDIAN MEDICAL SERVICE

Maj G V Ram Mohan to be Lt -Col

Lt (on prob) W Laurie relinquishes his prob appt

DEATHS IN THE SERVICES

Inspector General JAMES HAMILTON MARTIN D.S O who died at his home in Ealing on Feb 14th in his 96th year was the son of Hamilton Duckworth Martin, of Truro Cornwall He qualified M.R C.S Eng from University College London in 1864 and entered the Royal Navy the following year becoming fleet surgeon in 1884 deputy inspector general of hospitals and fleets in 1894 and finally inspector-general in 1900 He had a varied experience with Sulee pirates in 1872 during the Zulu war of 1879 the Egyptian war of 1882 the Eastern Sudan campaign of 1884 and the operations against the Sultanate of Witu in 1890 He was mentioned many times in dispatches, was twice wounded and was created D S O in 1891 On retirement in 1901 he was awarded a Greenwich Hospital pension

Major CHARLES EDWARD GREY STALKARTT R.A.M C (retd) who died on Feb 18th at Alverstoke, Hants in his 72nd year was son of John Stalkartt of Chupra Bengal He qualified at Edinburgh in 1886 took his M.D in 1890 entered the R.A.M C and rose to the rank of major in 1903 He served in South Africa in 1900 and was placed on retired pay in July 1911 but was recalled to the active list in August 1914 and put in charge of the base depôt medical stores in France In his earlier post graduate days he had been prosector of anatomy in Edinburgh University and he contributed to the R.A.M.C *Journal* notes on necrosis of the femur malignant new growth of the tibia, fracture of the patella, and observations of the superior vena cava.

OBITUARY

ALFRED JOHN WILSON CHAMINGS,
M B Camb F R C.S Eng

ON Feb 21st Mr Chamings died at Worthing at the age of 33 He was surgeon in charge of the ear nose, and throat department at the Princess Beatrice Hospital and consulting laryngologist to the Woolwich War Memorial Hospital.

The only son of Mr H E Chamings, for many years a distinguished official of the London County Council he was educated at Westminster School and went to Cambridge in 1922 where he became a scholar of St. Catherine s In 1925 he entered St George s Hospital where he quickly distinguished himself gaining several coveted surgical prizes before qualifying in 1927 He took his Cambridge degree in 1929 and the fellowship of the Royal College of Surgeons in 1931 After holding three house posts at St. George s he began to specialise, and was rapidly successful in gaining appointments becoming registrar at Golden-square surgeon to the nose and throat department at Paddington Green Children s Hospital and at Princess Elizabeth Hospital and chief assistant at St Thomas s Hospital. In 1932 he became surgeon to the throat department of the Princess Beatrice Hospital and both there and at St Thomas s he soon made a name for himself by his skill, kindliness and conscientiousness Two of his colleagues write that nothing was ever too much trouble to him if it helped his patient He was utterly selfless in his devotion to work, and this in spite of a frame never robust. In 1934 he recovered from a severe streptococcal infection acquired at operation and once more restarted work with all his former enthusiasm He was warned not to overtax himself but his nature was such that he could never relax as long as there was work to do A little over a year ago he was found to have contracted pulmonary tuberculosis, and was given leave of absence from all his hospital appointments But it was all too obvious even then that the chance of recovery was slender Those of his friends and advisers—and they were many—who watched his long illness were deeply impressed by his cheerfulness and fortitude and no less by the devoted care of his parents

LEONARD MOLLOY M D Dubl

Major Leonard Molloy who died in a London nursing home on Feb 19th in his 76th year had spent most of his active life in practice at Blackpool for which he was Member of Parliament in 1922–23 Son of Richard Molloy of Rathgar co Dublin he was educated at Trinity College Dublin graduating in 1882 and taking his medical degree in 1889 after which he went on to higher diplomas As a student he carried off prizes over a wide range of subjects He was resident at Sir P Dun s Hospital and obtained the special certificate of the Rotunda before settling in Blackpool in 1891 There he became hon surgeon to the Victoria Hospital and hon secretary to its medical board as well as visiting consultant to a number of places including Rossall School. He was constant in helping the St. John Ambulance Brigade as surgeon lecturer and examiner was made an hon life member of the Association and a Knight of Grace of the Order of St John of Jerusalem Already major in the Duke of Lancaster's Own Yeomanry he was in France and Belgium from 1914 to 1917 was mentioned in dispatches and awarded the D S O On his return he became chairman of the Blackpool branch of the British Legion and a justice of the peace He wrote not a little in medical papers on unusual cases that he met in practice while keeping up his early interest in biological research For fifteen years he was chairman of the Blackpool musical festival. Major Molloy married in 1922 Ethel Mary daughter of James W Willan solicitor of Todmorden. Latterly he spent the winter at Monte Carlo on the climate of which he wrote a small treatise His recreations were hunting shooting and salmon fishing and he was a member of the Cavalry and 1900 clubs.

PUBLIC HEALTH

THE L C C HOSPITAL SERVICE

ON the eve of the election of a new council opportunity has been taken by the hospitals and medical services committee, of which Mr Somerville Hastings is chairman, to present the outgoing council with some particulars of the development and extension of the hospital service during the past three years A similar report of the previous three years, when Dr Barrie Lambert was chairman of the corresponding committee, was summarised at the time in our columns (1933, 2, 1341) The number of hospitals, including institutions allocated for use as hospitals, is 74—the same as it was three years ago During the period Heatherwood Hospital, Ascot, has come under L C C control, and the South Grove institution has gone over to the public assistance side At the time of their transfer to the Council six years ago many of the hospitals were not of modern standard in structure, staffing, or equipment, and much leeway has been made up, although much remains to be done Structural changes now in execution or prospect are about thrice as extensive as those at the earlier survey While the staff of the hospitals has been greatly augmented the working hours of the nurses have been reduced, and the engagement of women orderlies relieves probationer nurses of domestic duties and allows them more time for training Almoners have been appointed at all the general hospitals

New accommodation to the extent of 996 beds (including that of Heatherwood) has been provided since March, 1934 Further extensions will increase the number of beds by 1834, not including the scheme for a new general hospital of 500 beds in South London New accommodation has been provided for 813 nurses and is in prospect for another 1596 The number of persons required to administer all these hospitals is very large Three central subcommittees meet fortnightly, and there are 62 separate hospital and institution committees, as well as ten assessment subcommittees, with some 440 members in all. Many of these are coöpted, there are 14 coöpted members on the central committee and subcommittees, while the regional committees consist mainly of coöpted members

The total bed accommodation at the general and special hospitals, including institutions allocated for use as hospitals, is as follows

Year Dec 31st	Accommodation in hospitals	Accommodation in public health institutions allocated for use as hospitals			Total accommodation	Total accommodation for the sick.
		Total	Sick	Other		
1930	32 389	9620	*4018*	*5602*	42 009	*36 407*
1931	32 928	8509	*3935*	*4574*	41,437	*36,863*
1932	32,763	8509	*3751*	*4758*	41 272	*36 514*
1933	32 674	8275	*3885*	*4394*	40 949	*36 559*
1934	32 803	7958	*3382*	*4576*	40 761	*36,185*
1935	32 897	6320	*3051*	*3269*	39 217	*35 948*
1936	32 409	5911	*2929*	*2982*	38 320	*35 338*

The drop in the 1936 figure is explained by the fact that beds at the North Eastern Hospital and the Princess Mary's Hospital, Margate, were out of commission owing to reconstruction But for this the figure would be 33,076

Many of the schemes at fever hospitals relate to the provision of isolation accommodation for the purpose of reducing the risk of cross infection, 265 such beds have been provided at five hospitals and work is in progress at four others Isolation accommodation is required for cases of secondary infection, those in which the diagnosis is doubtful on admission, and the uncommon diseases for which a larger ward is not available This accommodation consists of single bedded wards, separated by partly glazed screens, with duty rooms so placed that the nurses can keep the patients under observation Steps are also being taken to provide three receiving rooms in each of the Council's fever hospitals to facilitate the admission of different types of infections

A striking example of how one change leads to another is afforded by the gift of the United Services Fund in 1934 of Heatherwood Hospital, Ascot, for children suffering from surgical tuberculosis and other orthopædic diseases Originally containing 144 beds this hospital has been extended by the addition of another 100 beds As a result Princess Mary's Hospital for Children, Margate, where similar types of case were treated, is no longer required for that purpose, and is being reconstructed as a convalescent home for women, in place of the existing accommodation at St Benedict's Hospital, Tooting This leaves St Benedict's free for chronic sick female patients

Progress has been made in the scheme for providing a complete pathological service, the simpler examinations being carried out in the hospital laboratories, the more technical ones in group laboratories or in the special histological laboratory Last year the Council approved the establishment of a central biochemical laboratory for investigating nutritional diseases The number of examinations has increased from 180,000 in 1931 to nearly 500,000 in 1936, those in the histological laboratory during the same period from 600 to 22,000

Notable in the tuberculosis scheme is the decision of the Council in 1934 not to ask resident patients for contributions towards the cost of their treatment or for the boarding out of their children, in order not to imperil recovery by financial anxiety Where patients are sent to a sanatorium outside London the Council has accepted responsibility for the cost of further treatment, if the need should arise, up to two years from the date of discharge No charge other than amounts due from a benefit society is made for dentures provided for patients under treatment, clothing, boots, and spectacles may also be provided at the cost of the Council. Facilities for occupational treatment of tuberculous patients are being experimentally provided at Archway and Highgate Hospitals

The reallocation of patients and inmates as between public health and public assistance institutions is proceeding, whereas three years ago there were 4700 public assistance cases being cared for in public health institutions, and about 1600 public health cases in public assistance institutions, exchanges effected by the end of 1936 reduced the figures to 1739 and 803 respectively It is satisfactory that on April 1st next only seven institutions will remain unappropriated

Arrangements for the provision of consultants and specialists are being supplemented in the following manner —

Venereal diseases —A consultant for venereal diseases has been appointed under whose care has been placed the unit at St Margaret s Hospital for the treatment of cases of vulvo vaginitis in children

Thoracic surgery —*In order to obtain the best results* in the general hospitals, a thoracic surgery unit has been established at St Mary Abbots Hospital, at which cases requiring the attention of a thoracic surgeon are concentrated as far as possible The staff of thoracic surgeons at this unit comprises one position of honorary chief surgeon and two positions of thoracic surgeon (part time) As from April 1st 1937 a consulting thoracic physician will also be employed at this unit

Rheumatism.—Three consultants for rheumatism cases who formerly acted in an honorary capacity will be added to the staff of consultants and specialists for research into selected cases of rheumatic diseases at St Stephen s Hospital, as from and including April 1st 1937

Radiologists —In view of the increasing amount of X ray work in the general hospitals arrangements are being made for the employment of full time instead of part-time radiologists In the first instance a full time officer will be employed as from and including April 1st 1937 at each of two groups of hospitals one north and the other south of the Thames

Anæsthetists —The fee payable to anæsthetists called in as required under the scheme has been increased Double fees are payable to consulting anæsthetists in connexion with thoracic surgery when visiting the outlying medical tuberculosis hospitals

Emergency visits —Arrangements have been made for the payment of additional remuneration to consultants and specialists for all visits in excess of the routine visits for which they have been engaged. Under the previous arrangements extra remuneration for emergency visits was not paid unless the consultant or specialist concerned was required to attend in emergencies for sessions amounting during any year to the equivalent of one session a week in excess of the number of sessions for which he had been engaged

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED FEB 13TH 1937

Notifications —The following cases of infectious disease were notified during the week: Small pox, 0 scarlet-fever 1450; diphtheria, 1212 enteric fever 49; pneumonia (primary or influenzal) 2539 puerperal fever 35; puerperal pyrexia 127; cerebrospinal fever 33 acute poliomyelitis 13 acute polio-encephalitis 1 encephalitis lethargica 8 dysentery 19; ophthalmia neonatorum 87 No case of cholera plague or typhus fever was notified during the week.

Notifications of acute pneumonia in England and Wales were only 53 per cent above expectation in London itself they were 46 per cent. below

The number of cases in the Infectious Hospitals of the London County Council on Feb 10th was 3354 which included Scarlet fever 805 diphtheria 994; measles 32; whooping-cough 588 puerperal fever 21 mothers (plus 14 babies); encephalitis lethargica 283 poliomyelitis 3. At St. Margaret's Hospital there were 16 babies (plus 9 mothers) with ophthalmia neonatorum

Deaths —In 122 great towns including London there was no death from small pox 1 (1) from enteric fever 5 (0) from measles 3 (2) from scarlet fever 39 (10) from whooping-cough 30 (1) from diphtheria 45 (11) from diarrhœa and enteritis under two years, and 697 (50) from influenza The figures in parentheses are those for London itself

Of the 596 deaths from influenza in the great towns of England and Wales outside Greater London the largest totals were reported from Birmingham 63 Manchester 46, Liverpool 36, Sheffield 18 Newcastle-on Tyne 15 Blackpool 14 Bolton and Sunderland each 13 Of these only Birmingham Liverpool and Newcastle showed a rise on the previous week s figure Corresponding figures for Scottish and Irish towns were Edinburgh 19 Glasgow 15 Dublin 31 Belfast 5

Liverpool reported the only death from enteric fever. The fatal cases of whooping-cough were widely scattered over [illegible]4 great towns, mostly in the northern area Bolton reported 3 Leeds Manchester and Newcastle each [illegible] Fatal cases of diphtheria were reported from 21 great towns Manchester 5 Liverpool 4 Leeds 3

The number of stillbirths notified during the week was 274 (corresponding to a rate of 41 per 1000 total births) including 39 in London.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Regency Bill: Total Incapacity of the Sovereign

In the House of Lords on Feb 10th the Regency Bill passed through the committee stage. On Clause 2 (Regency during total incapacity of the Sovereign) Viscount HALIFAX Lord Privy Seal moved in Subsection (1) to leave out the words on the evidence of physicians or otherwise and to insert by evidence which shall include the evidence of physicians. The amendment he said was proposed in accordance with the promise given by the Home Secretary on the report stage in the House of Commons The object was to remove doubts as to the meaning of the clause as it was originally drafted and to make it clear that the evidence on which the persons designated in the Bill would decide whether the Sovereign had become incapable or not must necessarily include the evidence of physicians but might also include other evidence as well —This amendment was agreed to

On Feb 23rd the Bill was read a third time and passed

Maternity Services in Scotland

DOMICILIARY INSTRUCTION

When the Maternity Services (Scotland) Bill was further considered by a Standing Committee of the House of Commons on Feb 10th discussion was resumed on the following new clause moved by Mr GRAHAM KERR:

In every area where there is a recognised medical school the local authority of that area and the Department of Health shall take steps to secure that adequate facilities are made available for the practical domiciliary instruction in midwifery of any person undergoing training with a view to becoming a duly qualified medical practitioner or a certified midwife

He said that there was nothing new in the method of private domiciliary training for students. The object of the new clause was simply to ensure that the existing method of training students would be maintained and if possible improved Child bearing women must be attended by persons who had undergone proper and adequate training For 33 years he had been in the closest relationship with medical students and those who knew them would have no hesitation in trusting them In 1936 the Glasgow Maternity Hospital practice had 4721 mothers attended in their own homes and out of those there was only one death. Any fear that the student might do maternity work before he had enough general experience was entirely unfounded

Mr WESTWOOD said that the clause directly opposed the spirit and intention of the Bill which had become necessary partly because the poorest classes had been unable to obtain skilled professional attendance The proposed new clause might be an honest endeavour to improve the Bill but it was certainly unwise There was no limit to those who could practise midwifery because the clause said that facilities were to be made available for the practical domiciliary instruction of any person undergoing training' Arrangements for domiciliary treatment should only be made with the consent of those who occupied the homes and not by the local authority alone.

He hoped that the Government would resist the proposal

Mr T M COOPER, Lord Advocate, said that it was vital that there should be continuity in the supply of skilled doctors and midwives, but he did not think this new clause was an appropriate measure to achieve that end. He suggested that under the deliberately wide terms of the provisions of the Bill every facility would be given for training, but that the proposal in the new clause approached the question from an unfortunate angle It would involve, if literally read and inexorably applied, something like an intolerable invasion of the liberties of private people, because it would require the local authority and the Department to secure that adequate facilities for domiciliary instruction were made available to any person engaged in training, which was unnecessarily wide

Sir E GRAHAM-LITTLE said that it was essential to keep the general practitioner trained to the best possible extent Even in hospitals which really set out to deal with midwifery the greater part of these cases were outside the hospitals The students were far from being unpopular in the homes of the people they attended and it was quite wrong to suppose that the mortality among the rich was any less than amongst the poor

Mr CASSELLS said he thought that the Committee would be well advised to accept the advice of the Lord Advocate There was no reference at all in this new clause to the opinion of the General Medical Council There had been no attempt whatever by the mover of the clause to explain what was a recognised medical school and there was no definition There was nothing in the clause to suggest that there was to be personal supervision of the medical students

Mr G A MORRISON said that it was rather a serious thing that the authorities who were responsible for training were firmly of the opinion that the present facilities were not adequate For example, he had been sent figures that showed that 68 per cent of the births in maternity hospitals were abnormal and it was surely not advisable to study the normal from the abnormal —Mr MACLEAN said that the figure quoted by Mr Morrison was the strongest argument for not accepting the new clause

Mr GRAHAM KERR said that he did not feel prepared to withdraw the new clause In his view this was a question of safeguarding human life

The new clause was negatived without a division.

A PANEL OF SPECIALISTS

Mr MATHERS moved the following new clause

It shall be lawful for a local authority to appoint a number of registered medical practitioners to form a panel for the purposes of Section 22 of the Midwives (Scotland) Act, 1915, and when such panel is so formed the medical practitioner called to her assistance by a midwife provided by a local authority under Subsection (1) of Section 1 of this Act shall be selected from the panel so formed

The object of the new clause was to ensure that a midwife who found herself faced with some difficulty should be in a position to call in a medical practitioner skilled in midwifery Figures had been supplied to him by the Glasgow Corporation in support of the contention that the medical practitioner called upon often did not make a point of practising midwifery In Glasgow during 1935 out of 544 medical practitioners whose practice included service under the National Health Insurance Act, 144 did no midwifery, 166 attended 1–5 cases, 82 attended 6–10 cases, 86 attended 11–20 cases, and 66 attended over 20 cases in the year Specialism, however, would not be possible in country districts where practitioners were few, and that was why the clause was made optional. In Glasgow in 1933–35 medical help was called in by midwives in 31–33 per cent of the total births That proved the necessity for providing that a midwife who found herself faced with a difficulty in a confinement should be able to call to her aid a specially qualified doctor at the earliest moment He understood that the proposal had been approved in principle by the Association of Counties and Cities in Scotland and by the Scottish branch of the Society of Medical Officers of Health

Mr ELLIOT said the difficulties in accepting this clause were greater than Mr Mathers realised It could not be complete unless penal provisions were incorporated, and the mere suggestion should make them look at the proposal very seriously The keeping of any medical register was a matter which was carefully safeguarded by the General Medical Council, but under this new clause local authorities would have power not merely to keep a register but to strike people off it, a power with which they had never before been entrusted. Under National Health Insurance even the local authority that was actually administering the benefit had no power to strike a doctor off the panel That could only be done after a special inquiry and a recommendation to the Minister It would be very paradoxical for the Bill to subject a person to severe penalties for having obeyed a call from a midwife that might be very reasonable in the circumstances He hoped that having raised the discussion Mr Mathers would not press the new clause

Mr WESTWOOD suggested that the difficulty about penalties could be avoided if the word " shall " was changed to " may "—Mr CASSELLS said the last proposal would render the clause completely abortive, because there was no doubt that it would be a local midwife who would be called in and should know herself who was the properly skilled medical practitioner to call in He hoped that the Secretary of State for Scotland would be able to bring in a new clause on the Report stage which to a material extent would meet their point

Mr ELLIOT said it was the desire of the Committee that in some way or other knowledge should be available to the midwife about those who were practising midwifery, and Mr Westwood had suggested that some voluntary list might meet the position He himself thought that the local medical practitioners would be able to give better information than anyone else, and such a list could be made available to the midwife These were two reasonable suggestions, but he did not think they should be backed by a penal clause which would put them in great difficulties of drafting

Mr MATHERS asked leave to withdraw the new clause on the understanding that before the Report stage the matter would be further looked into

The Committee stage was concluded and the Bill was ordered to be reported to the House

Sale of Methylated Spirits

In the House of Commons on Feb 17th Miss HORSBRUGH asked for leave to bring in a Bill to control the sale in Scotland of methylated spirits and of methylated spirits in admixture, and for other purposes connected therewith She said that the main provisions of the Bill were based on an enactment by the Parliament of Northern Ireland which had proved satisfactory in dealing with this particular evil Retailers of methylated spirits had to obtain a yearly Customs and Excise licence It was proposed in this Bill that certain further conditions should be attached to the granting of a licence, such as the registration of the applicants with the local authority, the keeping of a record of sales, and the selling only on receipt of an order signed by the purchaser stating the purchaser's address and the purpose for which the spirits were required The measure was not a party one, it had support from different parts of the House She believed it had also the approval of a very large section of public opinion in Scotland With the minimum of inconvenience to those who sold mineralised methylated spirits for legitimate purposes it should be possible to provide a means in Scotland of combating a real menace to the mental moral and physical welfare of the people

Leave to bring in the Bill was granted, and the Bill was read a first time

Special Areas Bill

The Children s Minimum Council which is affiliated with many educational and welfare associations has submitted a memorandum on the Special Areas Bill to the Prime Minister The Council recognises that the primary purpose to which the Bill must be directed is the restoration of prosperity and purchasing power in the areas themselves But it believes that the Government should include in the Bill measures which will protect the health of the mothers and children from the worst effects of long continued poverty and unemployment It considers that the national campaign for a Fitter Britain will become a mockery if the children in distressed areas are denied the food they need for health and growth. The memorandum quotes tables showing that as the number of children in the family increases, the amount of money available for food per head progressively decreases The Council considers that the present distribution of free milk and meals to school-children and free milk to expectant mothers is woefully inadequate and recommends, inter alia, (1) the supply of free milk to children in public elementary schools and to scholarship children in secondary schools (2) the supply of free school meals to children belonging to families where the amount available for food falls below a scale to be determined by the Ministry of Health; (3) the supply of free boots to school-children in such families and (4) the supply of free milk to expectant and nursing mothers and children under school age in such families.

Hospital Provision in Malta

On Feb 22nd the House of Commons went into Committee of Supply on a Supplementary Estimate for Colonial and Middle Eastern Services

Mr ORMSBY GORE, Secretary of State for the Colonies said that the vote was for the money spent at the time of the Italo-Abyssinian war on improved civilian defences The Government had to send out quickly to Malta anti-gas respirators for the civilian population They had to establish an anti-gas school and train people in passive defence in case an attack had taken place during the sanctions period There were also special arrangements which had to be made involving the expenditure of money for the preparation of hospitals in case of attack

The vote was agreed to

Veterinary Education

Mr W S MORRISON Minister of Agriculture said that a sum of £750 for grants in aid of annual expenditure in agricultural colleges and institutes was for the maintenance of the Veterinary College pending a detailed scheme of veterinary education The additional sum of £18,300 for diseases of animals included £10 000 compensation for foot-and mouth disease An increase in the cattle slaughtered under the Tuberculosis Orders was due to the increasing vigilance of the local authorities and farmers Animals were also being condemned at an earlier age when they were normally more valuable The £600 provided for research work under the Diseases of Fish Bill was to pay a man to test fish to see if they were suffering from furunculosis or not

Replying to Mr SHORT he said that Sir Frederick Hobday had retired from the Royal Veterinary College on account of age His great services had been fully appreciated

The vote was agreed to

The Deaf Children (School Attendance) Bill passed through committee

In the House of Lords on Feb 22nd a Bill presented by Viscount GAGE to amend the description of the persons with whom arrangements may be made under the National Health Insurance Act, 1936 for the dispensing of medicines was read a first time

QUESTION TIME

THURSDAY FEB 18TH

Danger to Children of Inflammable Toys

Mr MATHERS asked the Home Secretary whether his attention had been called to recent cases of death through fire caused by the accidental ignition of children s toys made of celluloid and whether he proposed to take action to prevent such articles being exposed for sale

Mr ROLAND ROBINSON asked the Home Secretary how many accidents fatal or otherwise to children occurred in each of the last three years through the use of celluloid toys and whether he would consider the practicability of preventing the sale of inflammable toys —Sir JOHN SIMON replied I have no statistics on the point but accidents of this kind have been brought to the notice of the Home Office from time to time I am afraid that the practical difficulties in the way of controlling the sale of celluloid toys by means of legislation would be very great

Eggs

Brigadier-General CLIFTON BROWN asked the Minister of Health whether he would strengthen the present legislation under the Food and Drugs Act against the sale of dirty or stale eggs —Sir KINGSLEY WOOD replied I will bear in mind the suggestion of my hon friend but I doubt whether the object he desires could be attained by an amendment of the Food and Drugs (Adulteration) Act

Brigadier General CLIFTON BROWN asked the Minister of Health whether he was aware that imported liquid egg juice was used in cakes, buns &c and whether any of the tins that come into this country were opened and subjected to any medical analysis —Sir KINGSLEY WOOD replied: I am aware that imported liquid eggs are used by bakers and confectioners In common with other imported articles of food they are subject to examination at the port of entry and such examinations are I understand, made from time to time A number of special bacteriological examinations of liquid eggs have also been made by my department

St John Ambulance Brigade and the Coronation

Sir THOMAS COOK asked the Parliamentary Secretary to the Ministry of Health as representing the First Commissioner of Works, if he would arrange for a site to be available for the purpose of a camp for members of the St. John Ambulance Brigade drawn from the provinces who would be doing duty in the streets on Coronation day —Mr R. S HUDSON replied: My noble friend regrets that he is unable to entertain this request

FRIDAY FEB 19TH

Diphtheria at Poole

Mr GROVES asked the Minister of Health how many cases of diphtheria had been notified in children at Poole who had at any time received one or more inoculations against diphtheria; and whether any of them were fatal.—Sir KINGSLEY WOOD replied: According to the information furnished by the local authority five such cases have been notified and none of them was fatal

MONDAY FEB 22ND

Cambridge Scientists Anti War Group and Air Raid Precautions

Mr PARKER asked the Home Secretary (1) whether he would make an investigation into the observations of the Cambridge scientists as the result of their examination of recommendations put forward by the Air Raids Precautions Department of the Home Office and (2) whether he would cause to be published the full scientific evidence on which the proposals for the gas proofing of rooms in private houses had been based —Mr GEOFFREY LLOYD Under Secretary Home Office replied: I presume the hon Member refers to the Cambridge Scientists Anti War Group but I would point out that this group must not be confused with the general body of Cambridge scientists, and indeed His Majesty's Government are advised in regard to these matters by the most distinguished scientific experts not only from Cambridge but from Oxford and other universities The observations of the Cambridge Scientists' Anti War Group have been carefully investigated with the result that both the experiments themselves and the deductions made from them have been proved to be open to grave criticism It would not be in the public interest to disclose details of the experiments upon which the Government's plans are based, but, as I said in answer to a previous question, these experiments were conducted with actual war gases liberated under practical conditions, and the measures proposed would be effective in affording a very great measure of protection

Departmental Committee on Night Baking

Mr **Rhys Davies** asked the Home Secretary whether he would give the terms of reference and names of the departmental committee on night baking, and whether he could say when the committee would begin to take evidence —Mr **Geoffrey Lloyd** replied Yes, Sir, the terms of reference of the Committee are "To inquire into the effects likely to ensue to those engaged in the bread baking and flour confectionery industry, and to the public, in the event of the abolition by legislation of the practice of night baking now prevalent in the industry, and to consider and report whether or not such legislation would be desirable" The members are The Right Hon Lord Alness, K.C (Chairman), Mr John Adamson, chartered accountant, of Messrs McClelland, Ker and Co, Mr A W Garrett, Deputy Chief Inspector of Factories, Mr F Marshall, M P, and Sir Assheton Pownall, M P The Committee held a preliminary meeting last week and is taking evidence from the Factory Department to day I understand that arrangements are in train for the associations of employers and workers chiefly concerned to give evidence as soon as practicable Any other bodies of persons desirous of giving evidence should communicate with the Secretary at the Home Office as soon as possible

TUESDAY, FEB 23RD

Employment of Boys in Coal-mines

Mr **Short** asked the Secretary for Mines whether, since boys aged 14 were employed in coal pits on unsuitable work, sometimes with fatal results, he would take steps to prevent the coal owners continuing this undesirable practice —Capt **Crookshank** replied Some occupations are already barred to boys under a certain age, and when the Royal Commission have made their report and new legislation falls to be introduced, the desirability of imposing further limits on the employment of boys will be carefully considered

The Bedeaux System in Arms Factories

Mr **Hardie** asked the Secretary of State for War whether the Bedeaux system or the Taylor system was employed in any of the works or factories receiving contracts from his department —Mr **Duff Cooper** replied I have no precise information regarding the extent to which these systems are employed by war department contractors, but I understand that a number of contractors make use of the Bedeaux system, or some modification of it

Mr **Hardie** asked if the right hon gentleman understood the destruction of the nervous system which took place among workers who were so treated, and if he would take steps now to save the nervous system of persons whom he might require before long, so that he might have these men with completely unbroken nerves instead of men with nerves shattered by a stupid system

No further answer was given

MEDICAL NEWS

University of Cambridge

On Saturday last the regent house approved the recommendations made by the faculty board of medicine concerning the abolition of the thesis for the M B degree (see The Lancet, Feb 6th, p 335)

On Feb 20th the following degrees were conferred —

M B B Chir—W L Petter E B McDowall, J F Goodall, G S Steele Perkins and Christopher Hardwick

M B—E E Pochin and W F Richards

B Chir—G O Brooks

Major Thomas Dalling, M R C V S, of the Wellcome Physiological Research Laboratories, has been elected to the chair of animal pathology in the university

University of London

At a meeting of the senate on Feb 17th the title of professor of biochemistry in the University was conferred on Mr A C Chibnall, Sc D, in respect of the post held by him at the Imperial College (Royal College of Science) Prof Raymond Pearl, who holds the chair of biology at the school of hygiene Johns Hopkins University, Baltimore, was appointed Heath Clark lecturer for 1937

University of Glasgow

Dr J B Rennie assistant physician to the Royal Hospital for Sick Children, Glasgow has been appointed university lecturer in medicine

University of Birmingham

Dr Henry Pratt Newsholme, medical officer of health for Birmingham since 1927, has been appointed to the university chair of hygiene and public health in succession to the late Sir John Robertson

Dr Newsholme who is a nephew of Sir Arthur Newsholme obtained first class honours both in the London B Sc and the Oxford science schools He graduated in medicine from St Thomas s Hospital in 1910 became M D Oxon in 1915 and F R.C P Lond in 1927 Before going to Birmingham he was medical officer of health for the North Riding of Yorkshire and the county borough of Croydon

Society of Apothecaries of London

At recent examinations the following candidates were successful —

Surgery—E S Dismorr Univ of Camb and St George's Hosp, B T Jones St Mary's and West London Hosps, J E R Palmer, St. Mary's Hosp B A R Pitt Guy s Hosp A W B Perren Univ of Sheff J R Rocyn Jones Welsh National School of Medicine and R L Williams, London Hosp

Medicine—J D Anderson, St Bart. s Hosp R F B Bennett, Univ of Oxf and St George s Hosp H A Bhuttacharji Univ Coll Hosp S M M Niall Royal Colleges Edin G G Sahasrabuddhe, Bombay and West London Hosps, R G Stitt Westminster Hosp and G Theophilus Univ of Oxf and St. George s Hosp

Forensic Medicine.—J D Anderson St Bart s Hosp R F B Bennett Univ of Oxf and St George s Hosp H A Bhuttacharji Univ Coll Hosp, J T Boocock, Univ of Leeds S M M Niall Royal Colleges Edin G G Sahasrabuddhe Bombay and West London Hosps R G Stitt Westminster Hosp and G Theophilus Univ of Oxf and St George s Hosp

Midwifery—J D Buckner, Guy s Hosp, J W Cazalet Bombay and West London Hosps F T Futers King's Coll Hosp O I Green Univ of Oxf and Guy s Hosp W A Groom Guy s Hosp S J Nathan Charing Cross Hosp and R G Stitt Westminster Hosp

The following candidates, having completed the final examination, are granted the diploma of the society entitling them to practise medicine surgery, and midwifery R F B Bennett, H A Bhuttacharji, J T Boocock, J W Cazalet, E S Dismorr, F T Futers, J E R Palmer, J R Rocyn-Jones, and R L Williams

The guests at Tuesday's livery dinner of the Society of Apothecaries included the Lord Mayor and Sheriffs and Mr Montagu Norman, governor of the Bank of England In welcoming them Dr A P Gibbons, the master spoke of the ways in which the city looked after its children from the cradle to the crematorium and recalled the impression made by the Lord Mayor's procession—'we call it procession' in the City"—on his small son who came home and said his grace as "For what we are about to receive may the Lord Mayor make us truly thankful. In reply, the Lord Mayor quoted the rejoinder of a Londoner to an American "The Ohio is just water; the Mississippi is just mud but the Thames is liquid history The toast of the Guests proposed by Dr R. H. Hayes as junior warden drew responses from Sir Cuthbert Wallace P.R.C.S and Dr G N B Sebastian master of the Skinners Company Sir Cuthbert congratulated the apothecaries on having like the surgeons thrown off that domineering person the physician He expressed anxiety about the future of surgery in face of the new generation of scientific apothecaries and scientific physicians steeped in preventive medicine and immunology The surgeon might still be able to look after accidents but the Minister of Transport was trying to make the roads so safe that motorists could collide no more than electrons can It was sinister that the president of the surgeons should be associated with the master of the skinners; but at least the surgeons put most of it back. Dr Sebastian produced (not very convincing) arguments to show why 80 per cent of the inhabitants of prisons are drawn from the ranks of after-dinner speakers

Hunterian Society

The annual dinner of this society celebrating the 209th anniversary of the birth of John Hunter was held at the May Fair Hotel on Feb 17th with Mr H L. Attwater the president in the chair After the loyal toasts that to the immortal memory of John Hunter was drunk in silence Mr Albert C R Carter in proposing the health of the society said that he himself belonged to another society—the Knights of the Round Table—that had similar ideals of honour and chivalry ideals that had a world wide influence in the present days, and Hunter could be likened to King Arthur for his courage and devotion to duty The president responding said that the society had been through difficult days and had narrowly escaped amalgamation with another but it was growing monthly in numbers It owed its salvation largely to Mr Mortimer Woolf now editor of the transactions. On behalf of the council and fellows he presented Mr Woolf with a silver ink stand which he received with evident surprise and gratification. Mr Attwater announced that the gold medal given by the society for competition throughout the Empire had been awarded to Dr L. J A Parr of Sydney Australia Dr George Armour of Woodhall Spa was second The toast The Lord Mayor and the Corporation was proposed by Dr W H F Oxley who voiced the society's thanks for the Lord Mayor's generosity in lending a room in the Mansion House for some of the meetings; he was sure the place helped to enhance the society's prestige The Lord Mayor Sir George Broadbridge responding said how valuable he and the civic authorities found the work of the medical profession Mr Mortimer Woolf wittily proposed The Guests and Kindred Societies, welcoming especially the ladies. All doctors he said are the better for their wives and this was particularly true of John Hunter whose consort was a highly cultured woman a composer of songs and a poet Serjeant Sullivan said that the only toast a doctor could genuinely propose was Prosperity Long Life and Bad Health. He added however that the medical profession was largely responsible for the revolution in the state of the nation since his youth. He contrasted with its present condition the misery and degradation in the East End of London of those days where he never saw a child smile Sir James Hartigan said that the Army Medical Services remembered with gratitude how a threat of consumption drove John Hunter to take a staff surgeoncy and join the troops in Portugal Although he was later responsible for equipping medically no less than ten overseas expeditions, by his superhuman energy he still kept his position as the unquestioned head of his profession War to-day was very different however from what it was in Hunter's day Sir James quoted Lord Moynihan's remark that he had seen in one hour more destruction of life and limb than a surgeon could hope to save in a life-time The coöperation of every branch of medicine was essential but if in spite of statesmen's efforts, the emergency arose he was sure this coöperation would come Sir William Willcox, concluding the replies for the guests, paid a tribute to the society not only for living up to the high standards of Hunter but for its sociableness and he wished it prosperity and success on behalf of kindred societies During the evening Mr Tom Clare and Mr Robert Easton entertained the company with songs

Society of Radiographers

The annual dinner of this society was held on Feb 20th with Miss K. C Clark in the chair It marked the attainment of a membership of more than one thousand and the completion of ten years in the office of hon. secretary by Mr Frederick Melville During the evening Dr Duncan White was presented with the Stanley Melville medal Among those present were Mr G W C Kaye, D.Sc who proposed the health of the president and Prof J A. Crowther president of the Institute of Radiology Dr R M Beath chairman of the Ulster Radiographic Society; Dr Struthers Fulton chairman of the Scottish branch of the society; Dr Angus Macrae Dr Charles Read chairman of the Scottish Radiographic Society and Dr L A. Rowden.

British Health Resorts Association

A conference of this association will be held at Bournemouth on Saturday March 13th. In the morning Lord Horder will open a discussion on Wintering in England and in the afternoon Prof Kestner of the Rowett Institute Aberdeen will speak on the curative action of sea climate Further information may be had from the secretary of the association 109 Piccadilly W 1

Lebanon Hospital for Mental Diseases

The thirty-eighth annual meeting of this hospital will take place at the Cora Hotel, Upper Woburn place London W C on Tuesday March 2nd at 3 P.M when Dr R Percy Smith, the president will take the chair The speakers will include Dr Nathan Raw (Lord Chancellor's visitor in lunacy) and Dr Tylor Fox (acting chairman of the hospital)

Medical Tour in the Mediterranean

A medical tour organised by the Société Médicale du Littoral Méditerranéen, will take place from March 21st to 28th All the resorts on the French Riviera from Hyères to Mentone will be visited and receptions and scientific demonstrations will be held A children's welfare congress, concerning climatic conditions will also take place during this period Particulars can be had from the Society 24 rue Verdi Nice (A M) and the French Railway and Tourist Office 170 Piccadilly London W 1

Research Fellowship for Tavistock Clinic

The trustees of the Rockefeller Foundation have given a further research fellowship for a year to the Institute of Medical Psychology (Tavistock Clinic) The fellowship is held by Dr A T Macbeth Wilson who is engaged on the study of certain diseases—peptic ulcer essential hypertension diabetes mellitus and Graves's disease—whose onset has often been related to emotional disturbances in the lives of patients

Irish Medical Research Council

The first meeting of the recently incorporated Medical Research Council of Saorstat Eireann was held on Feb 10th The following members were present: Prof R P Farnan (chairman) Prof J W Bigger Prof J F Donegan Prof W J E Jessop Dr J McGrath Prof H Moore Prof T G Moorhead and Prof J M O Connor The following officers were appointed hon treasurers Dr McGrath and Prof O Connor hon secretary Prof Bigger; and solicitor Mr P H O Reilly

Nicol Rankin Memorial Fund

A fund has been opened to provide a permanent memorial to Mr Nicol Rankin at the Central London Throat Nose and Ear Hospital with which he was closely associated as a surgeon and a member of the committee of management Mr Rankin died in 1931 It is proposed to name a cot in the children's ward of the hospital after him Gifts for the fund should be sent to the treasurer Lord Erskine of Restormel Central London Throat Nose and Ear Hospital, Gray's Inn road W C.1

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole street, W

TUESDAY, March 2nd

Pathology 8 for 8 30 P.M (Guy's Hospital S E) G W Nicholson 1 Teratomata 2 Thyroid in Ovarian Tumour W N Mann 3 Carcinoma of Trachea F A Knott 4 Gaucher's Disease G P Wright and R H S Thompson 5 Gaucher's Disease S De Navasquez and R S Bruce Pearson 6 Syphilis of Lung C K Simpson 7 Primary Carcinoma of Liver 8 Paget's Disease of Skull 9 Retrograde Lymphatic Permeation of Carcinoma 10 Crohn's Regional Ileitis 11 Carbuncle of Kidney J C Colbeck 12 Adrenal Atrophy following Tuberculosis M M O Barrie (introduced by A F B Standfast) 13 The Effect of Maternal Vitamin E Deficiency on the Development of the Thyroid Gland in the Offspring W E Herbert and C W Shuttleworth 14 Bacterial Examination of Teeth in Root Resections 9 15 P M E M Koerner Streptolysin Titres in Erythema Nodosum and Rheumatoid Arthritis S De Navasquez Renal Lesions in Rabbits Produced by Staphylococcus Toxin

Orthopædics 8 30 P M Mr A M A Moore and Mr Reginald Broomhead Prevention and Treatment of Ununited Fractures Mr H A T Fairbank Mr G R Girdlestone and Mr K H Pridie will also speak

WEDNESDAY

History of Medicine 5 P.M, Dr E Ashworth Underwood Medicine and Science in the Writings of Smollett

Surgery and Radiology 8 30 P.M, Mr W Sampson Handley Dr W M Levitt, Mr G F Stebbing, and Dr J R K Paterson The Value of Pre- and Post operative Irradiation in Malignant Disease

FRIDAY

Otology 10 30 A M (Cases at 9 30 A.M) Dr W J McNally (Montreal) *Labyrinthine Reactions* and their Relation to the Clinical Tests (cinematograph and microscope slides)

Laryngology 5 P M (Cases at 4 P M) Dr McNally Carcinoma of the Pharynx and Cervical Glands Treated by Deep X Ray Therapy

Anæsthetics 8 30 P M Prof R R Macintosh Dr H W Featherstone Dr J T Hunter and Dr W S Sykes Impressions of Anæsthesia in U S A and Canada

MEDICAL SOCIETY OF LONDON 11, Chandos street, W

MONDAY March 1st —9 P.M, Sir Thomas Dunhill Surgery of the Thyroid Gland (Third Lettsomian lecture)

WEST LONDON MEDICO-CHIRURGICAL SOCIETY

FRIDAY, March 5th —8 30 P M (West London Hospital, W), Dr A F Hurst Prof Grey Turner, and Dr H W Post Diseases of the Colon.

LECTURES ADDRESSES DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS Pall Mall East S W

TUESDAY March 2nd, and THURSDAY —5 P M, Dr D E Denny Brown The Nervous Control of Micturition and its Disorders (Second and third Goulstonian lectures)

ROYAL INSTITUTION 21 Albemarle-street W

TUESDAY, March 2nd —5 15 P M Dr Edward Mellanby F R S Digestion and Indigestion (First of four lectures)

BRITISH POSTGRADUATE MEDICAL SCHOOL Ducane road W

TUESDAY March 2nd.—4 30 P M. Dr Gardiner-Hill Endocrine Diseases and Disturbances

WEDNESDAY —Noon clinical and pathological conference (medical) 2 P.M, Mr E J King Ph D Calcium phosphorus Metabolism 3 15 P.M clinical and pathological conference (surgical) 4 30 P M Miss Honor Fell D Sc Tissue Culture

THURSDAY —Noon, clinical and pathological conference (obstetrics and gynæcology) 2 30 P M Dr Duncan White Radiological Demonstration 3 30 P M., Mr A K Henry Demonstrations on the Cadaver of Surgical Exposures 3 30 P.M Prof Gilbert Strachan Malignant Neoplasms of Uterus

FRIDAY —2 P M operative obstetrics 2 30 P M Prof Hey Groves Fractures 3 P M department of gynæcology pathological demonstration

Daily 10 A M. to 4 P M medical clinics surgical clinics and operations obstetrical and gynæcological clinics and operations

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE Hammersmith W

MONDAY, March 1st —10 A M skin clinic. 11 A.M surgical wards 2 P M operations surgical and gynæcological wards medical surgical and gynæcological clinics

TUESDAY —10 A.M medical wards 11 A.M surgical wards 2 P M operations, medical surgical and throat clinics 4 15 P.M Mr Roche Hæmaturia and Bladder Growths.

WEDNESDAY —10 A.M children's ward and clinic. 11 A.M., medical wards 2 P.M gynæcological operations medical surgical and eye clinics 4 15 P.M, Mr Harvey Jackson Applications of Radiology in Neuro surgery

THURSDAY —10 A.M neurological and gynæcological clinics Noon, fracture clinic 2 P M operations medical, surgical and genito urinary and eye clinics

FRIDAY —10 A.M. medical wards skin clinic Noon lecture on treatment 2 P M operations medical surgical, and throat clinics 4 15 P M, Dr Eric Hudson Pleurisy with Effusion

SATURDAY —10 A.M., children's and surgical clinic 11 A.M. medical wards

The lectures at 4 15 P.M. are open to all medical practitioners without fee

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION 1 Wimpole street W

MONDAY March 1st to SATURDAY, March 6th.—NATIONAL TEMPERANCE HOSPITAL Hampstead road, N W Tues, 8 30 P.M, Mr A E Porritt Herniæ Thurs 8 30 P M., Mr T Meyrick Thomas *Intestinal Obstruction.*—NATIONAL TEMPERANCE HOSPITAL Hampstead road N W Tues and Thurs, 8 P M clinical and pathological medical course —ROYAL WATERLOO HOSPITAL Waterloo road S E All day course in medicine surgery and gynæcology —BROMPTON HOSPITAL S W 5 P M., twice weekly M R C.P course —ROYAL CHEST HOSPITAL, City road, E C Mon, Wed, and Fri. 8 P M. M.R C P course —ST MARK'S HOSPITAL City road E C All day course in proctology —*Unless otherwise stated courses are open only to members of the Fellowship*

SOUTH WEST LONDON POST GRADUATE ASSOCIATION

WEDNESDAY, March 3rd —4 P M (St James's Hospital Ouseley road S W), Mr C D Read Vaginal Discharge

NATIONAL HOSPITAL Queen square, W C

MONDAY, March 1st —3 30 P M. Dr Kinnier Wilson Congenital and Heredo familial Diseases (II)

TUESDAY —3 30 P.M. Mr Jackson Burrows Orthopædic *Treatment of Paralysis*

WEDNESDAY —3 30 P M., Dr Kinnier Wilson Clinical Demonstration

THURSDAY —3 30 P M. Dr Critchley Vascular Diseases of the Brain (III)

FRIDAY —3 30 P M, Dr Purdon Martin Poliomyelitis

Out patient clinic daily at 2 P M

HOSPITAL FOR SICK CHILDREN Great Ormond street, W C

THURSDAY March 4th —2 P.M, Sir Lancelot Barrington Ward The Indications for Operation in Diseases of the Abdomen 3 P M. Dr Reginald Lightwood Indications for and Interpretations of Bismuth Meals and Barium Enemata.

Out patient clinics daily at 10 A.M, and ward visits at 2 P M

HAMPSTEAD GENERAL AND NORTH WEST LONDON HOSPITAL

WEDNESDAY March 3rd.—4 P.M Dr H V Morlock Hæmoptysis

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL Gray's Inn road W C

FRIDAY March 5th —4 P M Mr Archer Ryland Adventures in the Gullet

NATIONAL HOSPITAL FOR DISEASES OF THE HEART Westmorcland street W

TUESDAY, March 2nd —5 30 P M, Dr F W Price Heart *Disease and Childbearing* (II)

ST JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE 42 Ranelagh road S W

FRIDAY, March 5th —4 30 P M Dr C A Robinson Electrotherapy in the Rheumatic Diseases

LEEDS GENERAL INFIRMARY

TUESDAY, March 2nd —3 30 P M Dr J R H Towers Demonstration of Cardiac Cases and a Short Paper on the Heart in Middle Age

MANCHESTER ROYAL INFIRMARY

TUESDAY March 2nd —4 15 P.M Dr F E Tylecote The Preventative Aspect in Treatment and its Importance in Practice

FRIDAY —4 15 P.M Mr John Morley Demonstration of Surgical Cases

ANCOATS HOSPITAL Manchester

THURSDAY March 4th —4 15 P.M, Mr E S Brentnall *Common Injuries of the Knee joint*

GLASGOW POST GRADUATE MEDICAL ASSOCIATION

WEDNESDAY March 3rd.—4 15 P M (Royal Infirmary), Mr James Harper Sinus Infection

Appointments

BROWN W M M B F R C.S Edin has been appointed Hon. Surgeon *to the Herefordshire General Hospital, Hereford*

DAVIS ALBERT M D Ch.M Manch F R C S Eng, Hon. Gynæcologist with charge of Out patients to the French Hospital London

OWEN C L M B Camb, F.R C S Eng, Hon Assistant Surgeon to the Herefordshire General Hospital, Hereford

PELLEW, L J T M.B Adelaide F R C S Eng Resident Medical Officer at the Woolwich and *District Hospital*

Leicester Royal Infirmary —The following appointments are announced —

DOWNING F J L D.S Eng *Honorary Dental Surgeon*

GOODSON S W L D.S Eng Senior Hon Assistant Dental Surgeon and

ROWLETT J A T L D.S Eng Junior Hon Assistant Dental Surgeon

Certifying Surgeons under the Factory and Workshop Acts Dr B W ALEXANDER (Gillingham Dorset), Dr J A. Galletly (Bourne Lincs)

Vacancies

For further information refer to the advertisement columns

Acton Hosp W—Consulting Surgeon

Albert Dock Hosp Connaught road E—Res. M O., at rate of £110

Army Dental Corps—Eight Commissions

Ashton under Lyne District Infirmary—H.S. at rate of £150

Ayr Heathfield Infectious Diseases Hosp—Res M O £350

Bangor, Caernarvonshire and Anglesey Infirmary—Sen. and Jun H.S., £150 and £100 respectively

Barking Borough—Asst M O., £600

Bath Royal United Hosp—H.S. to Ear Nose, and Throat Dept., at rate of £150

Birmingham Romsley Hill Sanatorium.—Res. Asst M O at rate of £240.

Birmingham, Selly Oak Hosp—Jun M O at rate of £200

Blackburn Queen s Park Hosp and Institution—Res Jun. Asst. M O, at rate of £150–£200

Blackburn Royal Infirmary—Cas O £175

Bradford Children s Hosp—H.S, £100

Brighton, Royal Sussex County Hosp—Cas H.S. £1 0

Bristol Royal Infirmary—Clin Anæsthetist to Dental Dept £150

British Hosp for Functional Mental and Nervous Disorders 72 Camden road N W—Hon Physician

British Postgraduate Medical School Ducane road W—Cas. O at rate of £150

Burton-on Trent General Infirmary—H P and Cas O £150

Canterbury Kent and Canterbury Hosp—H.S. at rate of £125

Cardiff City Mental Hosp, Whitchurch—H.P £200

Cardiff Royal Infirmary—H.S. to Ear, Nose and Throat Dept. at rate of £100 Also H.P 's H.S.'s and Cas Surg O each at rate of £50

Carlisle, Cumberland Infirmary—Res M O s, at rate of £175 and £155

City of London Maternity Hosp City-road, E C—Asst Res. M O., at rate of £80

Connaught Hosp Walthamstow E—Two Hon Anæsthetists

Dreadnought Hosp Greenwich S E—H S and H.P each at rate of £110

Elizabeth Garrett Anderson Hosp Euston-road, N W—Hon. Psychiatrist Also Res. Third H.S., at rate of £50

Gloucestershire Royal Infirmary &c.—H.S to Ear Nose, and Throat Dept., at rate of £150

Guildford Royal Surrey County Hosp—H.S. at rate of £150

Guy's Hosp., S E—Asst. M O for Salomon s Infant Welfare Centre.

Halifax Royal Infirmary—Second H.S at rate of £175 Also Hon Asst Physician and two Hon Anæsthetists

Hosp. for Sick Children, Great Ormond street W C—Res H P and Res. H.S. each at rate of £100

Hull, Anlaby-road Institution—Asst M O £350

Hull Royal Infirmary—H.S to Ophth. and Ear, Nose and Throat Depts also second Cas O each at rate of £150

Ilford King George Hosp—H.P at rate of £100

Ipswich County Borough—M O H £1000

Leigh Infirmary, Lancashire—Sen and Jun. Res. H S s at rate of £250 and £150 respectively

Lincoln County Hosp—Sen. and Jun. H.S £250 and £150 respectively

Liverpool David Lewis Northern Hosp—Cas. O, at rate of £1?0

Liverpool Heart Hosp—Additional Hon Asst. Physician Also First Asst.

Liverpool Sanatorium, Delamere Forest Frodsham—Sen Asst. to Med Supt £325

London County Council—Asst M O s (Grade II), £250, Temp Dist M O for Area V £150 Part time Cons. Ophthalmologists each £125 &c

London Hosp E—Paterson Research Scholar and Chief Asst. for Cardiac Dept. £400 Also 1st Asst. to Thoracic Surgery Dept

Manchester Ancoats Hosp—Med. Reg £50

Manchester Ear Hosp—H.S.O Hosp. registered for D.L.O Salary £1 0 per annum

Manchester Park Hosp., Davyhulme.—Res. Med Supt., £9?0 &c.

Manchester Royal Eye Hosp.—Jun H.S. £120

Manchester St Mary's Hosps—Four H.S s each at rate of £50

Newcastle-upon Tyne Eye Hosp—Sen H.S £300

Northampton General Hosp—H P H.S s and Cas O each at rate of £150

North Riding of Yorkshire County Council &c.—Borough M O.H and Asst to County M O H £500

Norwich City—Res M O Isolation Hosp Asst. M O H and Asst School M O £450

Nottingham General Hosp—H S and H.P, each at rate of £1?0

Preston and County of Lancaster Royal Infirmary—H.S to Eye, Ear Nose, and Throat Dept at rate of £150

Preston Biddulph Grange Orthopædic Hosp—Jun H.S. at rate of £200

Prince of Wales's General Hosp N—Jun H P and two Jun H.S's, each at rate of £?0

Princess Beatrice Hosp Earl's Court S W—Res. Surg O., at rate of £?00 Also H P and Cas. O., at rate of £110

Princess Elizabeth of York Hosp for Children Shadwell E—H P at rate of £125

Princess Louise Kensington Hosp for Children St Quintin-avenue W—Part-time Registrar £100

Queen s Hosp for Children Hackney-road E—H P and Cas. O each at rate of £100

Royal Air Force Medical Service—Commissions.

Royal Army Medical Corps.—Commissions

Royal Cancer Hosp Fulham-road S W—H.S. and H.S. to Radium Dept, each at rate of £100

Royal National Orthopædic Hospital 234 Great Portland-street W—Two H.S s, each at rate of £1?0

Royal Naval Medical Service—Vacancies for M.O s

Royal Northern Hosp Holloway N—Surg Reg., £300 Also Consulting Physician

Royal Society of Medicine 1, Wimpole street W—William Gibson Research Scholarship for Medical Women £29?.

St Albans and Mid Herts Hosp Church-crescent—Res. H.S. £150

St John Clinic and Institute of Physical Medicine, Ranelagh road, S W—Surgeon for Ear Nose and Throat.

St. John's Hosp Lewisham S E—Hon Asst Surgeon.

St Mary's Hosp for Women and Children Plaistow E—Hon Asst. Gynæcologist

St Mary's Hosp W—Surgical Registrar £200

St. Peter's Hosp. for Stone &c. Henrietta street W C—H.S at rate of £75

Salford City—Asst. Maternity and Child Welfare M O £500

Salford Royal Hosp—H P., two H.S s and Cas. H.S., each at rate of £125

Seamen s Hosp Society Greenwich, S E—Hon Asst Physician Also Associate Surgeon for Dreadnought Hosp

Southend-on-Sea General Hosp—Cas O., at rate of £100

South London Hosp for Women, Clapham Common S W—Sen Clin Asst to Ophth Dept

Stafford Coton Hill Mental Hosp—Asst M O £350

Stafford, Staffordshire General Infirmary—H.S £300 Also H.P and Cas O, at rate of £150

Staffordshire County Council.—Second Asst. Bacteriologist and Pathologist, £700

Stoke-on Trent Burslem Haywood and Tunstall War Memorial Hosp—Res. H P, at rate of £150

Surrey County Council.—Jun Asst M O., £350

Swansea County Borough Mental Hospital.—Deputy Med. Supt. £5 5

Swaziland—M O, £500

Tancred Studentships—Three Studentships each £100

Taunton and Somerset Hosp—Sen R M O., at rate of £200

Wallasey Victoria Central Hosp—Hon Asst. Gynæcologist

Warrington Infirmary and Dispensary—Second and Third Residents, at rate of £175 and £150 respectively

Weir Hosp. Grove road Balham, S W—Jun. Res. M O £150

West London Hosp Hammersmith, W—Asst. Pathologist, £300 Also H P and two H.S. s, each at rate of £100

Worcester Royal Infirmary—H.S. £100

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Calne Wilts

Births, Marriages, and Deaths

BIRTHS

EVANS—On Feb 18th, at St. Bartholomew's Hospital the wife of Mr. E Stanley Evans, F R.C.S Ascot of a son

POTTS—On Feb 18th at Redditch the wife of Dr C Laurence Potts of a son

WHARTON—On Feb 19th at Banbury the wife of Dr J C Wharton of a son

MARRIAGES

NICHOLSON—SUTER.—On Feb 20th at St Andrew's Church Kingswood Surg Lt -Comdr C B Nicholson R.N., M.B B.S. to Margaret (Peggy), only daughter of Mr A. F Suter of Lower Kingswood Surrey

DEATHS

CHAMINGS—On Feb 21st at Worthing Alfred John Wilson Chamings M B Camb, F R C S Eng of Wimpole-street only son of Mr A G Chamings late Chief Officer Public Control Department London County Council

HAMILTON—On Feb 14th, at Deganwy N Wales, Alexander Hamilton, F R C.S Edin., late of Chester aged 91

HEWETSON—On Feb 22nd at Scarborough Alfred Hewetson M R.C.S Eng aged 69

MARTIN—On Feb 14th at Madeley road Ealing W James Hamilton Martin Inspector-General of Hospitals and Fleets R.N (Ret), D.S O M R.C.S Eng aged 95

MOLLOY—On Feb 19th, at a nursing home Major Leonard Greenham Star Molloy, D S O Knight of Grace of the Order of St. John of Jerusalem M D Dub of Sterling street S W

RANSOM—On Feb 22nd at Weston-super Mare Frederick Parlett Fisher Ransom M D Edin late Professor of Pharmacology University of London aged 87

REY—On Feb 13th at Bognor Sussex Jules Frederick Rey M R.C S Eng

STALKARTT.—On Feb 18th at Alverstoke, Hants, Major Charles Edward Grey Stalkartt M.D Edin. R.A.M.C retired in his 7 nd year

N.B—A fee of 7s. 6d. is charged for the insertion of Notices of Births Marriages and Deaths

LANGLEY MEMORIAL PRIZE —This prize of the value of £21 is open to officers of the Colonial Medical Service who are serving or who have served in West Africa. It will be awarded for the best paper submitted on a topic falling within one of the following subjects: tropical medicine or surgery; tropical hygiene and sanitation; or tropical entomology and parasitology Special consideration will be given to original work Papers, which may consist of either published or unpublished work must be delivered to the secretary London School of Hygiene and Tropical Medicine Keppel-street Gower-street London W C 1 by Oct 1st

NOTES, COMMENTS, AND ABSTRACTS

MANIPULATIVE SURGERY

SIR HERBERT BARKER'S DEMONSTRATION AT ST THOMAS'S

Case Reports and Notes by

W Rowley Bristow, F R C S

On July 22nd, 1936, at the invitation of the British Orthopædic Association, Sir Herbert Barker gave a demonstration of his methods of manipulation at St Thomas's Hospital.[1] He treated 18 patients on that afternoon He visited St Thomas's the day before the demonstration, and saw a number of patients who had been collected, that he might choose those on whom he wished to demonstrate He made his selection from these, and also brought to the demonstration a number of patients who had consulted him and were willing to be manipulated at the hospital

It was clearly pointed out at the meeting that Sir Herbert Barker had very kindly accepted the invitation to demonstrate his methods of manipulation, that the meeting was in no sense a tribunal to judge the value of manipulation in surgery, or even necessarily to estimate its value to these particular patients The members were grateful to Barker for showing for the first time to a body of surgeons the actual technique which he employed Barker was invited to give this demonstration because the Association felt that his record and the position which he had attained more than compensated any possible objections which this break with tradition might be thought to raise

Barker, trained as a bone setter, coined the name "manipulative surgery" as being more correctly descriptive of his work, and for many years, and indeed all his life, fought hard both to improve its status and to obtain recognition for what he rightly called "a hinterland of surgery"

Since the meeting many inquiries have been received from members to know what happened to the patients, and Barker himself is anxious that some report should be published as to the success or failure of what he did on the occasion of his demonstration and at his subsequent visits to the hospital. Barker visited St Thomas's again on July 27th and Sept 10th and saw the patients, and in some instances manipulated a second and even a third time with or without gas anæsthesia

A detailed report of what happened to each individual patient forms a part of this communication, and indeed is all the report that is needed, but it is thought that some general observations and a critical survey may be of interest.

Case Reports

Case 1 —*Recurrent dislocation of shoulder* in a man Shoulder troublesome for 15 years Has "dislocated" hundreds of times sometimes daily Before Barker saw this patient he wrote 'I have consulted several doctors who told me that there is no cure, and that the state of my shoulder must be regarded as permanent" Has never had to be reduced by a doctor

July 22nd, 1936 Manipulated under nitrous oxide

Patient reports (July 27th) "Cranked a car next day" Nov 18th 'Perfect"

Barker reports "It is over four months since I treated this case, and only during one period of a week did the shoulder give any trouble at all and this was towards the end of September No sign of weakness since then The muscular contour of the shoulder is now normal, and the patient can stand any kind of strain I believe he is quite cured"

February, 1937 Patient remains well

Case 2 —*Recurrent dislocation of shoulder* in a man of 25 Went out at rugger, reduced on the field Two months later, out again at rugger, reduced by doctor Has been out eight times

Sept 10th, 1936 Manipulated under nitrous oxide

Results —Patient writes "No trouble Not doing heavy work Arm feels stronger and has more confidence"

February, 1937 Patient remains well

Comment —Barker is very insistent that in his experience manipulation performed as he performs it permanently cures these patients with recurrent dislocation of shoulder

Case 3 —*Stiff, painful shoulder* in a woman of 61 Six weeks' history, insidious onset, getting worse Abduction full rotations limited

July 22nd, 1936 Manipulated

July 23rd Remanipulated under nitrous oxide

Sept 10th Remanipulated under nitrous oxide

Result —Little or no improvement

Comment —This case was not of Barker's choice and he was not sanguine about the results of manipulation, but he thinks further manipulation will result in a cure

Case 4 —*Tennis-elbow* in a medical man Onset April, 1936

July 22nd, 1936 Manipulated

July 23rd Remanipulated under nitrous oxide and later again manipulated

Patient reports "After first manipulation I was much better, after the second rather worse, and much better after the third The elbow has gradually got well, and since October I have felt nothing of it I can now swing an axe in comfort"

Barker reports "This patient would have been right in a week had I been able to see him on consecutive days"

Case 5 —*Tennis-elbow* in a man Onset May, 1936

July 22nd, 1936 Manipulation under nitrous oxide

Patient says "Gradually got better Able to play tennis and won a tennis tournament soon after manipulation Backhand still a trouble" (Sept 10th)

Later report "Cured"

Case 6 —*Tennis-elbow* in a man Onset nine months ago

July 22nd, 1936 Manipulation under nitrous oxide

Sept 10th Remanipulation

Barker's comment 'When I see them again, I always put them through the same manipulative range, to be sure they are free Hence the note, remanipulation Sept 10th"

Patient says "Able to play tennis normally in ten days after first manipulation Thank you for getting rid of a trouble which had strenuously refused to move under other treatment"

Comment —Rapid cure

Case 7 —*Osteo-arthritis of knee* in a woman of 57 Six months' pain Extreme of movement limited

July 22nd 1936 Manipulated under nitrous oxide

July 23rd and 27th Remanipulated

Result —Greater range of movement but more pain.

February, 1937 Definitely improved

Comment —This patient was not one of Barker's choice, but he desires to continue treatment He thinks perfect result probable

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[1] A brief account of this demonstration was published in The Lancet 1936, 2 252 The late results are now recorded by Mr Bristow —Ed L

CASE 8 —*Derangement of internal semilunar cartilage* in a woman of 20
July 22nd, 1936 : Manipulation under nitrous oxide
July 27th : Remanipulated
Result —Failed to respond to two manipulations at a very short interval. Knee gave way on two subsequent occasions. Has since had a torn semilunar cartilage removed at operation
Barker says he would like to have manipulated this case several times more under gas, and that he considers one manipulation under an anæsthetic was insufficient before finally deciding to operate though he thinks the case was probably one for the open operation

CASE 9 —*Internal derangement of knee internal semilunar cartilage* in a man of 30 Injured 13 years ago then got well in six months No trouble for next ten years Has given way two or three times since Knee normal on examination
July 22nd 1936 : Manipulated under nitrous oxide
Barker reports Since the manipulation, has only had slight mishap on one occasion towards end of second week in November causing some effusion. Perfect comfort for four months. Consider cure is likely ultimately ; meantime joint is greatly improved

CASE 10 —*Torn internal semilunar cartilage* in a man of 27 Knee locked and unlocked under gas in June 1936 Knee normal on examination.
July 22nd 1936 : Manipulation under nitrous oxide
July 23rd and Sept 10th Remanipulated
Nov 19th : Remanipulated under nitrous oxide
Result —Failed to respond to treatment. Knee keeps giving way and has been out for two days at a time
Barker thinks this is definitely a cartilage injury calling for open operation.

CASE 11 —*Internal derangement of knee* in a man of 26 Two years ago kicked on outer side of the knee Complains of constant pain on the outer side Has never locked clicked or let him down Knee normal on examination
July 22nd, 1936 : Manipulation under nitrous oxide
Patient writes After manipulation knee felt normal."

CASE 12.—*Adhesions in hip and knee* in a man of 30 Said to have dislocated hip in November 1935 Hip held flexed and adducted Limited range Knee also stiff
July 22nd 1936 : Manipulation under nitrous oxide
July 23rd and 27th Remanipulation
Result —Hip much freer Knee normal. Walks with a limp Complains of pains in the head.

Comment —Definitely improved by manipulation Probably will be cured when compensation is settled

CASE 13.—*Plano valgoid feet* in a child of 11 Twelve months aching both feet after exercise Both feet mobile
July 22nd 1936 : Manipulation under nitrous oxide
Three subsequent manipulations
Mother writes We are delighted to find that she is really able to enjoy life as children of her age should running about and playing games The feet are giving no trouble Previous to your manipulation a local orthopædic surgeon could offer no cure and advised no form of exercise to tire the feet.

Comment —Cured

CASE 14.—*Pes planus and hallux rigidus* in a child of 13
July 22nd 1936 : Manipulation under nitrous oxide
Sept 10th Remanipulated
Mother writes Playing lacrosse learning dancing No pain. Manipulative surgery seems wonderful to us.

Comment —Cured Given proper shoes and exercises after manipulation.

CASE 15 —*Stiff arthritic foot hallux rigidus* in a woman of 50. Fifteen years history
July 22nd 1936 : Manipulation under nitrous oxide
Patient says "Cured No pain
Barker writes Hallux rigidus of 15 years standing Great relief at once Four subsequent manipulations rendered the toe quite comfortable and restored normal movement. I believe such a condition is considered incurable in a patient of her age

Comment.—Improved This patient had been under an orthopædic surgeon and had tried every kind of non-operative treatment Her symptoms undoubtedly relieved by repeated forcible manipulation—a treatment not usually applied for this condition

CASE 16 —*Lumbosacral and sacro iliac strain* in a woman of 46 Over two years low back pain No sciatica
July 22nd 1936 : Manipulation under nitrous oxide
July 23rd and Sept 10th : Remanipulated.
Patient writes "Cured Life's a joy !
Barker writes Daily improvement resulting in perfect cure in a few weeks. Had been under hospital and private treatment for two years without benefit

Comment —Complete cure in a most difficult patient

CASE 17 —*Lumbosacral strain* in a woman of 37 Pain in the low back. Eleven years standing since the birth of a child No sciatica Extension of the lumbar region limited
July 22nd 1936 : Manipulation without nitrous oxide
Patient says She noticed no difference for 14 days Since then has gradually got better Not perfect yet

Comment —Is still improving Will probably be cured.

Critical Survey

CHOICE OF PATIENT

He chose the patients well and refused any that he thought unsuitable for manipulative treatment One or two—e g one woman with an arthritis of wrist—he refused but agreed to try at our request. He liked to treat a patient with symptoms and without physical signs—e g to manipulate a mobile foot—as well as those with definite limitation of movement or even actual deformity It is only fair to add that he tackled some unattractive problems

TECHNIQUE

He uses gas (nitrous oxide) anæsthesia but sometimes simply sprays the part with ethyl chloride and at subsequent manipulation does not hesitate to use gas again several times if necessary The patient is in a low easy arm chair for manipulation of the knee or foot—a good position which enables the operator to apply force conveniently the patient's body acting as a good counter A very low couch or plinth is used for manipulations of the back sacro iliacs or hip joints For the shoulder he prefers a special chair a stool with a straight back which does not impede the movements of the arms The position of the patient and the operator is well arranged.

Barker has powerful hands and uses his body weight to apply the accessory force and leverage In all grips and manipulations he employs strong traction and considerable force is not content to put a joint through its anatomical range but treats each as if it were a ball and-socket.

In manipulating the *elbow* for the strain of the common extensor group the so-called tennis-elbow he not only flexes and extends, with traction and in all degrees of pronation but in addition forcibly abducts and adducts the joint—that is forces lateral hinge movement His technique in such cases is the most thorough and forceful we have seen. He maintains that uncomplicated cases of tennis-elbow should be cured in a few days and often with only one or two manipulations if given during consecutive days.

In manipulating the *foot*, he forces full range, particularly towards adduction and plantar flexion at the mid tarsal joint. He does not, as has been rather forcibly stated, attempt anything in the way of flattening or breaking down the arch of the foot. In cases of rigid flat foot with deformity, he forcibly reshapes the foot, never uses special shoes, supports, or plaster of-Paris, and repeats his manipulations as often as necessary under nitrous oxide anæsthesia. The patient is encouraged to walk immediately after manipulation.

His belief in traction—and it is good—is well shown in his handling of the adult hallux rigidus. An elderly female, with this deformity, was undoubtedly helped, and her symptoms disappeared, after his manipulation of this joint; with forcible traction as the constant factor, the great toe was forced through all its range, plantar flexion, dorsiflexion, abduction, adduction, and circumduction. This deformity is one which we are not accustomed to treat by manipulation, but with this patient it undoubtedly succeeded.

AFTER TREATMENT

Barker sees the patient on the day following the manipulation, and again two or three times, or as many times as he thinks necessary. He instructs them what exercises to perform. He has evolved his own exercises, and they are good. He relies on no other help or assistance, and does not employ a masseuse or gymnast as we do. I think he would save time and fatigue if he were assisted as we are by first rate trained gymnasts rather than undertake all this after treatment and supervision himself.

I saw him handle one woman whose knee he had manipulated twice previously for a chronic rheumatism, really a mild subacute arthritis of knee. She hobbled into the room. After a third manipulation Barker spent a quarter of an hour walking her round, teaching her to walk, insisting on an equal length of stride, and so forth, and she walked normally. He is very thorough, and conscientious, and careful in detailing and in supervising the after-treatment of the patients he manipulates.

Barker possesses a very strong personality. Once he undertakes the treatment of a patient, he does not visualise the possibility of failure. This tremendous optimism must have and does have its effect upon the patient. He claims for the actual manipulation all the credit, but some part, and in many instances a large part of the cure is effected by the man himself. This is no prerogative of Barker or any other expert in treatment. It is possessed by all who are successful. It is a characteristic, which Barker shares with others, but he is quite unconscious of it, and has argued with me that it is all manipulation and that his personality plays no part, or at best a very minor one.

Whilst before the war manipulative surgery was to the great bulk of the profession a very "hinterland of surgery," as Barker then repeatedly told us, perhaps he does not fully recognise that the post-war epoch and the rise of orthopædic surgery have removed this reproach to medicine. Having spent so much of his life fighting for a cause in which he firmly and justly believed, he fights for it still and does not quite realise that his battle is won. Orthopædic surgeons now practise manipulation as an essential part of their specialty.

Conclusion

From Barker's demonstration, certain excellent details in his technique will probably be followed. He taught the value of repeated manipulation, the value of traction, the personal supervision and attention to exercising the joint in all directions afterwards, and above all, I think, the splendid optimism which is essentially a part of treatment, and a necessary part, in helping those with long standing disabilities, whose confidence has been rudely shaken by failures of the earlier efforts at cure.

It is due to Barker to say that but for his pioneer work the manipulative field of orthopædic surgery would not occupy the position it does to day, and that had his offers to demonstrate his technique been accepted twenty five years ago the general utilisation of this branch of therapeutics would not have been so long delayed.

PUBLIC VACCINATION

THE activities of the Association of Public Vaccinators of England and Wales during the last 17 years were reviewed at the annual meeting of the association, held in London on Jan 30th, by Dr James Bennett in a presidential address. In addition to giving members assistance in the solution of difficulties which from time to time arise as between the public vaccinator and his employing authority, and attempting to promote the interests of public vaccinators as a whole, the association have made an appeal to medical officers of health to have in mind the safeguarding of the general cause of vaccination, and have endeavoured in other ways to combat the idea that compulsory vaccination should be done away with. The association believe and have tried to convince the Society of Medical Officers of Health, that if compulsory vaccination, and with it the organised staff of vaccination officers were abolished, "vaccination would evaporate." They hold that the experience gained from voluntary diphtheria immunisation, where after intensive propaganda only 10 or at most 20 per cent of children have been immunised, and this only in a very few places, justifies their view that such element of compulsion as still remains is absolutely necessary if small-pox is to be prevented.

THE TRANSPARENT WOMAN

THIS name is given to a life-size figure of a woman, constructed of a transparent, non-inflammable material known as "cellhorn." It stands on a large base, which contains a system for lighting both the whole figure and each organ in the body singly by means of twenty pairs of low-temperature lamps. These can be lit up in sequence, or separately, and the name of each part appears on the base while it is being demonstrated. The organs are shown in their natural sizes and colours, and were made with the coöperation of anatomists, artists, and sculptors in the Hygiene Museum of Dresden, from photographs of normal specimens. Even such detailed structures as the ossicles of the ear and the sesamoids of the thumb are exactly reproduced. The model belongs to S H Camp and Co, Ltd, makers of anatomical supports, of Jackson, Mich, U S A, and 252, Regent-street, London, and is intended for the education of the lay public in matters of general health. It is now on a transcontinental tour of the American cities, accompanied by a medical lecturer. The same firm also produces a book of "Anatomical studies for physicians and surgeons," with 32 well-drawn plates, mainly of the abdomen and of the structures maintaining posture.

HOVE HOSPITAL.—On Feb 3rd Princess Helena Victoria opened extensions at this hospital, which have cost £35,000. They include an out-patient department, nurses' quarters, an operating theatre, an X ray and massage department, while the number of beds has been increased from 23 to 50.

ADDRESSES AND ORIGINAL ARTICLES

THROMBO ANGIITIS OBLITERANS *

BY E D TELFORD B Chir Camb F R C S Eng
EMERITUS PROFESSOR OF SURGERY UNIVERSITY OF MANCHESTER

(From the Department of Clinical Research in Disorders of the Autonomic Nervous System Manchester Royal Infirmary)

WE owe the term thrombo angiitis obliterans to Buerger who published his very complete and documented account of the condition in 1924. The disease had of course been recognised long before and sporadic cases had been described by v Winiwarter Parkes Weber and others A variety of names—endarteritis obliterans, juvenile and presenile gangrene—had added to the confusion. Buerger s title which has come into general use is based on his observation that the condition is by no means restricted to arteries and that phlebitis plays an important part in a proportion of cases (in my experience about 25 per cent) and may be antecedent or intercurrent in the development of the disease

Thrombo angiitis obliterans begins mainly in the medium-sized blood vessels of the limb such as the anterior and posterior tibials From these points it spreads, usually slowly but sometimes by acute exacerbations both upwards and downwards it may also develop in patches separated by intervening stretches of normal artery In certain cases in younger men it appears to begin in the digital arteries of the foot It is rare in the arms and I have never seen it there until it has made grave progress in the legs. It has been described in other arteries—e g the spermatic one of my patients died from involvement of the inferior mesenteric artery and in another who died at the age of 20 from angina the changes found in the coronary arteries were histologically identical with those of thrombo angiitis obliterans.

The disease is not only liable to exacerbations but is very variable in its course in different patients Attempts have been made to classify it into groups based on the rate of progress but in a large series it is doubtful if such grouping can be usefully or even justifiably done One of my patients had the disease for 38 years and suffered no more than a trivial loss of portions of two toes during this long time. Another died because the thrombosis ascended to his inferior mesenteric artery within seven months of the onset of claudication and between these cases there are innumerable variations Needless to say it is this variability which renders so difficult the judgment of therapeutic values

Although as yet of unknown origin the disease has the histological features of an inflammatory lesion—thrombosis occurs and is followed by organisation of the clot This although often alleviated to some extent by canalisation of the fibrous tissue causes the grave embarrassment of the circulation to which the symptoms are due

As regards sex incidence every writer has been struck by its rarity in women Among several hundred cases I have seen but three in women and Buerger s figures show no more than three in five hundred This very striking incidence must of course have a bearing on causation but so far its true significance has not been found neither is it clear why the disease should be found so often in the lower extremities. Differences of tone no doubt exist between the arteries of the legs and arms but no sufficient explanation of the predilection of the disease for the legs is forthcoming It is of interest to note however that in epidemics of ergotism in Eastern Europe the lesions are found more often in men and more usually in the legs

Stress was laid by earlier writers on the predominantly Jewish racial origin of the patient but wider experience has shown the fallacy of these statements In my own series there is no greater proportion of Jews than one would expect from the general population of Manchester Moreover large series of cases have been recorded as occurring in the natives of China and Siam. It is not very easy to determine the age of onset of the disease because we do not usually see cases until claudication has become severe and it is certain that the lesion has been present for a long time possibly some years. The majority of cases are found in the decade 30–40 years but a considerable number occur before this age In one remarkable case in which the diagnosis of thrombo angiitis obliterans appeared the only possible one the symptoms began at the age of 8 years when it was noticed that the boy could not play with his fellows owing to crippling pains in the calf on exertion The condition slowly worsened and at 10 he had lost the half of the right foot and all toes of the left foot from gangrene

Pathology

The microscopical changes have often been described and there is general agreement as to the findings It is worth while to point out that for the purpose of histological examination the material should not be chosen from a limb which is the site of infection The changes induced by a superadded infection are more widespread than is generally recognised and may obscure the picture

The process is essentially one of gradually increasing fibrosis. This is at once apparent when the attempt is made to dissect out material for examination It is not uncommon to find that the neurovascular packet in the popliteal space is embedded in a mass of fibrous tissue so dense that separation into artery vein and nerve is no longer possible. The artery is itself converted into a firm solid rod. This fibrosis of the artery may be patchy and limited to a definite stretch of the vessel—e g the popliteal artery may be occluded but the superficial femoral may be patent or the posterior tibial may be destroyed whilst the anterior tibial shows little or no change The fact that the disease may be extreme in one section shading off to the normal above and below gives one the opportunity to study the changes in various degrees of their development At the outset there is a lymphocytic invasion of the coats of the arteries and veins The cells are replaced by fibrous tissue and new vessels are seen extending into the media from the adventitia. Whilst these changes are proceeding clot is deposited upon the intima and the process of organisation of this clot begin Whilst organisation is taking place collections of lymphocytes arranged in a fashion suggestive of tubercles may be seen. These together with the rest of the tissue are gradually replaced by fibrous tissue This fibrous tissue is recanalised to some extent the small channels showing an endothelial lining and in some cases a thin coat of smooth muscle Ultimately the newly formed fibrous tissue in the media and adventitia appears to become denser and to contract This may be a contributory factor in the onset of gangrene by its pressure upon the connective tissue and channels in the lumen. The histological examination shows that the condition is more widespread than the clinical picture would suggest, both superficial and deep veins and arteries being affected, but all the vessels in one region are not equally affected.

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* A lecture delivered for the University of London at St Mary s Hospital medical school on Feb 23rd 1937

The veins show similar changes whilst the nerves show the changes of a secondary involvement in fibrous tissue.

POSSIBLE CAUSES

Whilst there is general agreement on the histopathology, it is very different when one comes to consider the cause of these grave structural changes. It may be said at once that the cause is at present unknown and all that one can offer is a catalogue of the various suggestions which have been made by different observers.

It is plain that *syphilis* has nothing to do with the disease. Among over 200 of our cases the Wassermann reaction was positive in but 3.

Tobacco in the form of excessive cigarette smoking has been incriminated by many writers. Paper and tobacco have alike been blamed. There is a certain amount of experimental evidence in favour of this view. It has been shown that when tobacco is smoked there is a drop in the cutaneous temperature of the digits, and that this is due to a toxic agent is shown by the fact that the drop does not occur if the smoke be filtered. Further, the number of patients who admit to smoking cigarettes in excess of say 15 a day appears considerable in a series of cases. One can only say that tobacco may be a contributory factor but is certainly not the direct and only cause. A number of cases have been seen in both men and women who have never smoked. In one of my cases the disease occurred in a most severe form, ending in a double amputation within three years of its first symptom, in an athlete who for reasons of training had never smoked.

Our Manchester cases include a large number of men of first-rate physique who have been keen athletes in their youth, and there appears also to be an unusual proportion of men who have followed occupations—e.g., navvies, slaters, and other outdoor workers—in *wet and cold*. But these can be no more than possible contributory causes. Routine examination of the blood for sugar, urea, calcium, phosphorus, and for coagulability time has yielded no clue.

A point worthy of inquiry and one which we are following up is the possible existence of a similar condition in horses.

SPASM OR INFECTION?

In the present absence of exact knowledge of the cause it may be more profitable to discuss the question on broader lines and to begin with the problem of whether it is due to spasm or infection.

This question is far from academic; it is very real, since on the answer will depend the curability of the disease by section of the sympathetic supply to the vessels. If the disease is truly spastic, the operation of sympathectomy will not merely alleviate but should cut short further progress. If on the other hand the condition is toxic or infective, division of the sympathetic supply will not arrest the disease though it might be of real value in bettering the condition of the limb by dilating such collateral paths as are still healthy.

In favour of the spastic theory the statement is made that on exertion the limb is blanched. This phenomenon is due, I believe, to the muscular action causing removal of blood to take place more quickly than blood can be replaced by the embarrassed arteries. Elevation of the limb will produce the like result without any question of spasm. It is possible also to adduce arguments from cases of the Raynaud phenomenon, cervical rib, and ergotism which tend to show that arterial spasm if sufficiently severe and prolonged will cause thrombosis.

The arguments in favour of a toxic origin are much more weighty. The associated phlebitis which in some patients appears to precede the onset of arterial disease suggests a toxic origin. In this respect the relation of thrombo-angiitis obliterans to the migrating forms of phlebitis needs fuller investigation.

Rabinowitz (1923) claims to have isolated a Gram-negative rod-shaped organism and to have produced by injection of the bacillus the same lesion in the ears and feet of rabbits as occurs in the human leg. These findings, however, have not to my knowledge been confirmed by other observers.

Perhaps the most important evidence on the question of a spastic or toxic origin of thrombo-angiitis obliterans is that obtained by careful follow-up during a number of years of those patients who have been treated by sympathectomy. These I will deal with under the head of results, but it is now evident that excellent as are the results of sympathectomy in many cases there are some in which one can only conclude that the disease has progressed. It is from these that I am driven regretfully to the conclusion that the disease is toxic rather than spastic.

It is also worthy of note that an examination of many hundreds of sections taken from the material removed at ganglionectomy operations on these cases, controlled by many sections taken from normals at various ages, shows nothing abnormal and certainly yields no evidence of any pathological alteration in the sympathetic chains. The observations, however, concern merely the pathway; there may none the less be some lesion of the higher centres.

Symptoms

Although a few of the more intelligent and observant patients may give a history of coldness of the feet and may have noticed blanching after walking, the average patient comes under observation on account of claudication. His walking distance may be of the order of a quarter of a mile, when walking at his usual pace on the level. It will be shorter if he walks quickly or uphill. His pain is usually in the calf but may be in the sole of the foot. This latter symptom is more common in the younger men and indicates that the disease is more severe in the small arteries of the foot. These younger patients exhibit blanching alternating with cyanosis which may lead to a diagnosis of Raynaud's disease. If these cases are followed up they are found to develop into true and severe thrombo-angiitis obliterans although in their earlier stages they have presented what is best regarded as one type of Raynaud phenomenon. In these cases a good pulse may be felt in the posterior tibial or even in the dorsalis pedis arteries. Usually, however, when a patient comes for examination no pulse can be felt in the posterior tibial or dorsalis pedis, and seldom in the popliteal, but almost always there is a good pulse in the common femoral artery. It is only in severe and late examples of the disease that the common femoral artery is thrombosed.

As the disease progresses the walking distance is further reduced and rubor begins to make its appearance. This rubor is most evident in the dependent position and disappears on elevation of the limb above the heart and in walking In the course of time the patient begins to suffer when at rest in bed from aching or actual pain, usually in the feet This he discovers is eased by the dependent position and by cold, and he usually learns to hang his leg out of the bed to alleviate it.

Eventually some form of trophic trouble is likely to arise. The most common type is an infection by the side of the nail of the great toe A very persistent onychia results and in many patients the nail has already been removed with the result that a chronic, very indolent ulcer is left over the nail bed. This shows no tendency to heal and makes no attempt to develop a new nail. The condition of the foot is now very precarious and any slight accident or further infection may precipitate the terminal gangrene By no means does every case end in gangrene it is however a common ending and by some writers has been put as high as 50 per cent.

The condition of rest-pain with its worry and loss of sleep produces much deterioration in general health and in the later stages there are found some of the most worn and emaciated patients that it is one's misfortune ever to see

Two points strike one in the examination of a large series of cases Firstly true thrombo angiitis obliterans is always bilateral but the patient will usually stoutly aver that only the one leg gives him trouble This is because the worse leg invariably pulls him up before the other leg has reached the stage of claudication. Clinical examination and above all the claudicometer (Simmons 1936) will show that the supposedly good leg is but little better than the one blamed by the patient Secondly great reserve should be used in giving a prognosis of the less involved limb It is quite common to find that this limb deteriorates more rapidly than its fellow and is likely to prove eventually to be the worse of the two

Diagnosis

It is of course only in recent years that the diagnosis of thrombo angiitis obliterans has been made with confidence It is therefore not surprising to find that many of these cases have had prolonged treatment for rheumatism, fibrositis, and very commonly for flat-foot. It should be realised that when a patient of middle age begins to complain of pain in the lower limb after exertion careful investigation should be made into the condition of the peripheral circulation

There are however three vascular lesions which may be mistaken for thrombo angiitis obliterans They are arterio sclerosis, the Raynaud phenomenon and the embolic exacerbations of arterio sclerosis. Confusion is most frequent between thrombo angiitis obliterans and arterio-sclerosis especially as the symptom of claudication occurs in both diseases

In the differential diagnosis age is an important factor A diagnosis of thrombo angiitis obliterans may be made with some confidence in patients up to 45 years or even 50 but from 50 to 60 such a diagnosis is doubtful, and after 60 it is very unlikely A routine clinical examination should be made in all cases for evidence of arterio sclerosis and a radiogram taken of the popliteal arteries

Since calcification plays no part in thrombo angiitis obliterans the slightest evidence of arterial shadow or flecks of lime in the radiography should put the case in the arterio-sclerotic group and I have admitted no such case to my series of cases

As already mentioned the Raynaud phenomenon in the feet of a young man should arouse grave suspicion Such a case is likely before long to show thrombosis of the digital arteries and will develop into a quite definite and usually severe thrombo angiitis obliterans There is thirdly a type of case of which we have had five instances in our clinic it may be mistaken for thrombo angiitis obliterans The patients are men between 40 and 50 years of age who whilst quite unaware that they have any trouble with their legs are suddenly seized by very severe pain in the calf. The foot is stone-cold and blanched but in the course of a few days some improvement is seen walking becomes possible and the man may return to work—but the circulation in the foot does not return to normal. It seems likely that these cases are embolic in origin the embolus having been derived from some patch of atheroma or calcification in a vessel in or proximal to the popliteal. That they are not true thrombo angiitis obliterans is evident from the fact of the sudden very painful onset of pain and from the observation that the opposite leg is apparently normal.

Treatment

A mere list of the treatments which have been tried in thrombo angiitis obliterans would be of formidable length and there is little point in mentioning many of them—they have only too often fallen by the way after an introduction more optimistic than warranted by results Broadly speaking the various methods of physiotherapy are purely palliative and not without danger in limbs whose vitality is slender The production of vasodilatation by foreign proteins is also a merely temporary expedient; if these substances are used in really efficient doses the patient suffers so great a malaise that he commonly gives up the treatment after a few attempts

Two new methods at present on trial are of interest —the intravenous-saline and the negative-pressure (Pavaex) method I have no personal experience of these

There can be no doubt that in our present ignorance of the cause of the disease the operation of section of the vasoconstrictor fibres is the most reasonable Sympathectomy will produce a lasting vasodilatation in the lower extremity and if the disease has a spastic origin it should arrest its progress, but if the disease is toxic and not spastic it may nevertheless help by dilating such collateral channels as still remain healthy Obviously it will do this much better in the earlier cases than in the more advanced ones with widespread thrombosis. The varieties of sympathectomy practised have been chiefly two: (1) perivascular stripping and (2) lumbar cord ganglionectomy

Perivascular stripping has been practised by many surgeons and although it appears to be anatomically unsound it does according to the reports of reliable surgeons produce some degree of distal vasodilatation. Such a result is however both incomplete and evanescent. If an attack on the vasoconstrictor fibres is held to be good treatment surely it is better to carry out a precise and complete operation by section and removal of a portion of the lumbar ganglionated chain These considerations led Stopford and myself to decide early in 1931 that we would submit a series of cases of thrombo angiitis obliterans to lumbar cord ganglionectomy and observe the results by a very frequent follow up over a number of years.

The operation consisted of a free removal in almost every case bilateral of the lumbar ganglionated cord It is difficult to speak of definite anatomical limits because as every surgeon who has worked in this region is aware, the anatomical arrangement of these cords is subject to very wide variations. The most that one can say is that as a routine we have excised that portion which corresponds to L 2, L 3, L 4 ganglia.

The total number of patients submitted to this operation for thrombo angiitis obliterans is 112. In only 5 of these cases was the operation unilateral, and this was only because one limb had already been amputated. The remainder were all bilateral, and the ganglionectomy was carried out by transperitoneal approach under spinal anæsthesia. There has been no operation mortality in this series.

RESULTS OF LUMBAR CORD GANGLIONECTOMY

I have on two previous occasions with Prof Stopford (1933, 1935) published results of lumbar cord ganglionectomy in thrombo angiitis obliterans. These results show that in half the cases the results may be classified as "good" inasmuch as though claudication is seldom cured the walking distance has increased, rest pain has been abolished, and onychia healed and the men are back at work. In a quarter of the cases the result can only be described as "fair". These patients say they are better for the operation but the clinical improvement is not great, and this is especially true of claudication. In the remaining quarter the result is not satisfactory; some have since died and in the rest amputation has been necessary. It is, however, only fair to point out that in these patients it has been possible to carry out successfully partial amputations of feet or removal of the leg with a seven inch tibial stump whereas without the sympathectomy, amputation through the lower third of the thigh must have been done. A recent review of 98 cases confirms these previous findings.

The present inquiry is however more immediately concerned with the question as to what effect lumbar cord ganglionectomy has on the progress of the disease. If an estimate of this kind is to have any value it is essential that the diagnosis be as certain as is possible and that a sufficient length of time shall have elapsed since the operation. I have, therefore, selected only such cases as presented symptoms before 45 years of age and only such as have been operated upon since for not less than three years. The inquiry is thus confined to undoubted cases in all of whom from three to six years have elapsed since operation. The number of these is 22, all of whom have recently been seen and their present condition carefully estimated. Of the 22, 16 remain well and it is certain that the disease has made no further progress. On the other hand 6 show some degree of deterioration and display further evidences of the disease. Two show recurrent attacks of phlebitis, which suggests that a toxic factor is still at work, and 4 have required some measure of amputation, in 2 cases of toes only and in 2 others at the "site of election".

From these observations I conclude that the main and probably only benefit to be derived from lumbar cord ganglionectomy is by the dilatation of collateral paths and not by the abolition of spasm. Disappointing as this conclusion is, it does not in the least weaken my contention that, up to the present, we have in sympathectomy the most hopeful of the many treatments which have been practised for this grave and distressing disease.

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THE MEDICAL TREATMENT OF NON-MALIGNANT PYLORIC STENOSIS IN ADULTS

By T Izod Bennett, M D, F R C P Lond.
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Peptic ulceration responds well to treatment, but it is a very common condition and in spite of the success which is so often achieved there are many cases in which it is responsible for prolonged ill health and not a few in which it causes death. But it must not be assumed that the failures are the result of an imperfect method of treatment because they are often due to neglect in applying to an individual case the modifications in treatment necessary for success in that particular case. Regulation of the patient's diet is the most important of all factors in treatment, and the requirements of the individual vary so greatly that no uniform system of dietetics can be expected to secure more than a certain proportion of good results.

In a recent paper (1936) I ventured to write as follows: "It is absurd to lay down the same laws for the bank clerk, the labourer, the actor, the professional footballer, the market gardener and the society woman. Obviously the hours of activity and the food requirements of these people will vary enormously." I am convinced that the majority of the failures of medical treatment can readily be explained by neglect to meet the requirements and habits of the individual patient; there is no other disease in which the personal factor is of such great importance, and if peptic ulcer is not more successfully treated in 1937 than it was in 1927 it is because many physicians and surgeons still continue to adopt a fixed system of treatment without realising that though it may be excellent it must always require some measure of adjustment for every case to which it is applied. An extreme illustration of this has been afforded during the last two years by the transient popularity of the treatment of peptic ulcer by means of injections of histidine. With little or no evidence that this treatment had any value practitioners were persuaded to abandon nearly all dietetic precautions and to rely on a series of hypodermic injections as a method of curing this dangerous disease. The results have been so disastrous that the method is now rapidly sinking into oblivion; but it cannot be sufficiently emphasised that apart from ridiculous forms of treatment such as this a proper proportion of successes cannot be secured unless each case is judged on its merits and the diet and medicine are arranged in each case so as to secure the measure of gastric rest necessary to bring about permanent healing and health.

THE PLACE OF SURGERY

Pyloric stenosis is a complication of peptic ulceration which is usually best treated surgically. By definition a mechanical obstacle is present which must militate against the success of purely medical treatment, and it is obvious that if the obstruction could be easily remedied it would be well to relieve it in every case even if careful medical treatment were necessary afterwards. But in actual practice pyloric stenosis can seldom be relieved surgically except by a short circuiting operation or by resection of part of the stomach or duodenum, and either of these operations is very serious. Gastro enterostomy may involve only a small immediate risk, but gastro enterostomy invariably deprives the patient of that delicate control by the pylorus which is one of the fundamental functions of the stomach Gastrectomy on the other hand is always a major operation and against the fact that it often achieves the elimination of a permanently diseased area must be set the fact that it not only changes the mechanics of the stomach but deprives the patient of a considerable area of mucosa, the value of which has been revealed by all the recent work on the genesis of pernicious anæmia and kindred diseases. In spite of these considerations it remains true that pyloric stenosis usually calls for surgical treatment the classical paper of Berkman (1923) favours this view and the discussion of the subject by Eusterman and Balfour (1935) indicates surgery as the treatment although considerable attention is given to medical measures chiefly of a pre operative nature. Crohn (1927) states that the treatment is pre eminently surgical and Rehfuss (1927) is only slightly less strongly in favour of surgery

It is by no means always easy to determine whether gastric retention is the result of organic pyloric stenosis but careful X ray examination will usually suffice to eliminate those cases in which gastric atony alone is responsible Apart from loss of tonus the pyloric function may be interfered with either by disease of neighbouring structures or reflexly as the result of a large ulcer on the lesser curvature of the stomach A six hour residue in the stomach after a barium meal is the usual criterion adopted by radiologists to determine the presence of gastric retention but even when this is accompanied by evident deformity and narrowing in the pyloric region it does not necessarily follow that the pyloric stenosis is permanently of severe degree Jordan and Kiefer (1934) reported 70 cases exhibiting a six hour residue with relief obtained by medical means in 80 per cent but it must be noted that recurrence was observed in rather a high proportion of these.

CONSERVATIVE TREATMENT

Pylorospasm and œdema may temporarily transform a slight degree of obstruction into a high one but it is not my intention to deal especially with such conditions in this communication but rather to stress the fact that it is a mistake to assume that organic narrowing of the pyloric canal even of high degree must in all cases be treated surgically The following case was one of the first which directed my attention to this fact —

A. B aged 45 consulted me in 1928 He had long been known to me as a strong healthy man who complained occasionally of dyspepsia When he first asked me to see him he said he merely had a recurrence of his dyspepsia due to several indiscreet meals but as he walked about the room he was occasionally seized with attacks of severe colicky pain Physical examination revealed nothing of importance but it was clear that his symptoms were probably organic he was ordered a duodenal ulcer diet with small doses of alkali Seen in London three weeks later he told me that he had had no symptoms since the day he saw me but I advised X ray examination and this revealed pyloric stenosis with a twenty four hour residue The patient was very well and had just begun work of an *important nature which he could not postpone* He was placed on a diet from which all substances such as raw vegetables calling for prolonged gastric indigestion were excluded and was told to continue the alkali During the subsequent eight years this patient has only once had any gastric symptoms he has gained weight and has carried out his full duties without interruption Subsequent X ray examinations confirm the presence of a relatively high-grade pyloric stenosis with a gastric retention of never less than seven hours

When I first saw this patient with the X ray findings I felt that I was perhaps doing wrong in yielding to his insistence that his apparent good health and the pressing nature of his work precluded operation His subsequent history convinces me that his attitude was justified.

Shortly afterwards the following case came under my observation :—

C D attended my out patients at the Middlesex Hospital for many years When first seen at the age of 50 he was recovering from an attack of pain and vomiting which had gone on for some weeks There was a past history suggestive of duodenal ulcer and X ray examination revealed pyloric stenosis with a gastric retention of over twenty four hours He refused operation because he was already feeling nearly well, and at my suggestion returned to work on a diet which was almost entirely fluid He took bottles of milk with him to his work Seen nine months later he was re-examined with the X rays which still showed a large gastric residue at nine hours the radiograms were displayed in the out patient department and the students were asked what advice should be given to him All of them said that he must have a gastro-enterostomy I then asked the patient how he had passed the previous day and he gave a vivid description of his work as a locomotive driver on one of the big railways involving long hours of very hard work which he was carrying out with complete efficiency This work he continued to perform for many years until he died of an acute pneumonia

In this case the decision not to operate was reached at the end of three weeks preliminary treatment; in this interval the patient had been radiographed and had remained on a fluid diet and had become so well that he begged me to permit him to attempt work; he seemed a very sensible man and quite understood my explanation that even a fluid diet maintained during his work hours might fail to keep him in health. But he was determined to try this and regained strength and maintained his weight. After a few months the emptying time of the stomach had somewhat improved and the patient was perfectly happy to continue on his restricted diet.

Carcinoma of the stomach is perhaps the commonest of all causes of organic pyloric obstruction and when this condition is suspected it is usually essential to proceed to surgical treatment without delay because progressive obstruction is inevitable; but cases arise in which there is doubt as to the exact nature of the obstruction and it by no means always follows that exploration is essential. The following is an illustration :—

F F an Anglican clergyman, consulted me at the age of 69 on account of loss of appetite for two months and a feeling of distension after meals He had no pain, was well nourished and of rosy countenance A gastric analysis showed a slightly climbing curve of HCl with a considerable residue at three hours without blood or evidence of stagnation The X ray examination showed an eight hour gastric residue and the duodenal cap was practically invisible. I asked Dr R. A. Young to see him with me in consultation and we agreed that his age relative good health, and the absence of evidence of malignancy justified us in recommending purely medical treatment He was given a diet largely of fluids with small doses of alkali I did not see him again for seven years at the end of which time he consulted me for a recurrence of symptoms; he had remained well and at work for the whole period but for four weeks had been troubled with heaviness and a little pain some hours after meals and loss of appetite He was a few pounds heavier than when I had first seen him and a repetition of the examination revealed the same findings as before A few days of semi-starvation restored him to health and he has been back at work and keeping well ever since his age being now

It is worthy of remark that the three cases which have been cited had had little or no vomiting, this fact made it unnecessary to employ gastric lavage, the diet given in each case consisted of glucose lemonade for a day or two, followed by diluted milky feeds and proceeded to a semi fluid diet for several weeks The first and third patients were ultimately able to take a light diet differing little from that of other members of the household, but care was taken to avoid all foods calling for prolonged gastric digestion Sufficient attention is seldom given by medical men to the fact that perhaps the principal function of the stomach is to secure *liquefaction* of the food, recognition of this function enables us to classify the foods requiring prolonged gastric digestion with considerable exactitude, liquefaction does not connote solution, but the chyme is a thin fluid having the consistency of weak gruel. It is clear that vegetable matter, particularly raw fruits and vegetables, is the most difficult to reduce to such a state, whilst fluids such as soups, milk, cream, and soluble and semi soluble carbohydrates, such as sugar, crisp starchy products, sponge cake, and milk puddings, are the most susceptible to gastric digestion With a little care it is not very difficult to devise a sufficient and appropriate diet whenever the degree of obstruction is not insuperable, but it is very necessary to secure the willing and intelligent coöperation of the patient, and success can seldom be achieved unless the patient with pyloric stenosis realises that the diet he is given has been chosen in the not altogether optimistic hope of avoiding surgical operation The following case is instructive —

Miss G H, aged 70, was seen at a time when she was bedridden on account of vomiting and discomfort in the upper abdomen This condition had been getting worse for five weeks Appetite was good and the patient was relatively well in the morning, but was seized with vomiting in the afternoon or evening There was a history very suggestive of duodenal ulcer many years previously On examination the stomach was standing out although peristalsis was not visible After a few days' treatment X ray examination revealed gastric obstruction with a delay of over twenty four hours No actual filling defect could be seen, and the past history of mild indigestion for many years made the diagnosis of non malignant pyloric obstruction probable Surgical treatment was recommended by myself and by Mr Gordon Taylor, but the patient and her relatives were extremely reluctant to accept this She was accordingly treated by gastric lavage and a strict fluid diet, and remained well for nine months, at the end of which time vomiting recurred and was accompanied by a small hæmatemesis She was transferred to hospital and after a few days' preparation gastro-enterostomy was successfully performed She has remained well since

The vomiting and high degree of pyloric obstruction in this case made it almost certain at the outset that medical treatment could only postpone operation, and it is equally certain that without gastric lavage the patient would never have regained the brief spell of good health which preceded surgical intervention, but the fact that she had easily learnt to wash out her own stomach was of great value in that it made preparation for operation easy and safe This is of importance because prolonged vomiting will not infrequently produce a disturbance of the blood chemistry, through loss of hydrochloric acid, which profoundly affects the general condition of the patient, and may even result in attacks of tetany The dilatation of the stomach and the presence of stagnant contents present complications very unfavourable to surgical success, and these factors go far to explain the relatively inferior surgical statistics of cases with gastric retention which have been recorded by Berkman (1923)

SUMMARY AND CONCLUSION

The purpose of this paper is not in any way to suggest that medical treatment should supplant surgical treatment in cases of non malignant pyloric stenosis, but it is desirable to stress once more the fact that every case of peptic ulcer, including those with pyloric stenosis, should be treated individually Patients with a high degree of pyloric stenosis are occasionally encountered in whom health and happiness can be preserved without surgical intervention Most careful judgment is necessary in the selection and treatment of these cases

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A REVIEW OF GOLD THERAPY*

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Gold salts were first employed experimentally in chronic rheumatism in 1926 (Feldt) following on their previous use in pulmonary tuberculosis In 1929 Forestier published a series of cases treated by this method, claiming some success In 1932 he stated his belief that in cases of progressive rheumatoid and infective arthritis, gold was the medicament of choice Since that date we have employed gold salts in selected cases at the Red Cross Clinic and elsewhere, and this paper is an attempt to review the results in the cases that we have followed up consistently

There seems to have been no rationale for the use of gold salts in rheumatic conditions Empirical trial in the hands of some observers tended to show, however, that good results may undoubtedly be produced in certain cases of chronic rheumatism whilst in rheumatism of the juvenile type (Slot and Deville 1934) and in osteo arthritis (Weissenbach and Françon 1936) it is generally agreed that they may be harmful

It is commonly recognised now that the salts of gold, like those of most of the other heavy metals, are not without danger when used indiscriminately Amongst the "accidents" of gold therapy, those most commonly met with seem to be dermatitis, fever, diarrhœa, stomatitis, and albuminuria Although investigation of many of the reported cases suggests that most of these accidents are due to overdosage, gold being a cumulative drug there is no doubt that there are wide variations in individual susceptibility, and for this reason close observation of all cases on gold treatment becomes a very real necessity The severe general reactions culminating in temporary exacerbation of the original complaint which are not infrequently observed at the end of a course of such injections presumably differ from these 'accidents' only in degree

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* A paper read to the Committee for the Investigation and Study of Rheumatism on Nov 3rd, 1936

Other observers (Douthwaite 1936 Pemberton 1936, Hartfall and Garland 1935) have recently reported series of cases successfully treated by means of gold salts and certain of these express the opinion that such general reactions far from being harmful are almost an essential to success This has not however been our own experience

Types Treated

Only selected cases have been treated, these all conforming unless so stated to the "rheumatoid type" of the Royal College of Physicians committee on chronic rheumatic disease (1934) Several cases of Still's disease were also treated, but are not included in the series under review (Copeman 1936). Three cases of spondylitis of the ankylosing type are however included and discussed

The present series consists of 51 cases, which is considerably less than the number treated but includes all those cases that it has proved possible to keep under periodical observation It is hoped that this series will remain under observation and will with others form the basis for a further annual survey The contra indications observed were merely those of age or obvious infirmity such as albuminuria or heart disease

Method of Treatment

In the great majority of cases the salt employed was Allochrysine, an aqueous solution of thio glyceryl-sulphonate of gold and sodium The injections were made intramuscularly into the buttock at intervals of five days in certain hospitalised cases and seven days in ambulant cases

The initial dose was in most cases 0·01 gramme progressing on the second occasion to 0·05 g and subsequently to 0·1 g which was seldom exceeded the total amount given in any series was 1·0–1·5 g This dosage is somewhat lower than that generally employed by other workers but it is thought that it is justified by the fact that although results may be slower they do ultimately appear in a remarkable proportion of cases treated, and the fact that in 51 cases we have only observed 3 accidents which could definitely be attributed to gold medication, and which proved severe enough to render further injections inadvisable None of these proved fatal. An interval of 6–8 weeks is left after the first series of injections is complete after which a further course is undertaken if the blood sedimentation rate is still raised

Before embarking upon the first series of injections the blood should be examined and if any degree of secondary anæmia is found treatment for this should be undertaken concurrently since it appears from our observations that gold tends to exacerbate and even to produce anæmia of this type After each course of injections it should again be examined if possible since as Shackle has pointed out to us a tendency towards leucopenia may sometimes be observed which in its most severe form may progress to agranulocytosis while the occurrence of eosinophilia is sometimes thought to give warning of dermatitis before this is obvious clinically

The blood sedimentation rate should also be estimated before gold injections are started and after each course This observation which is very simply performed although it is not actually diagnostic is apparently of great value in estimating the activity and so the progress of the disease It may thus be the first indication of improvement in certain cases

In our series of cases physical methods of all sorts were employed in addition to the gold therapy in order to prevent or correct mechanical deformity

Complications

A number of unpleasant sequelæ after the administration of gold salts have been reported although they have become rarer since the standard of dosage has been universally reduced for rheumatoid patients, following on the observation that this class of patient appears to be less tolerant of gold than tuberculous subjects (Secher and Gudiksen 1935) These unwanted effects fall chiefly upon the skin and mucous membranes the liver and kidneys and the hæmopoietic system. A number of fatalities have occurred, but very few of these have been published in detail. It must be assumed, however that these cases resulted from severe involvement of the latter system This is borne out by the fact that one of us was informed at the General Hospital in Vienna that in the three fatal cases seen there each had developed purpura before death It seems possible that the stages may be from purpura simplex without blood changes, through purpura hæmorrhagica to agranulocytosis and death if unchecked.

In the present series 4 cases of dermatitis were observed of which 2 were transient and of no clinical importance whilst 2 were of the exfoliative type Each of these latter cases lasted nearly three months and no form of treatment appeared to influence their course within that period In these two cases the arthritis (which had been rather overlooked during the anxious period of the dermatitis) was subsequently found to have been very much improved. The other complications observed in our series will be found in Table II and include diarrhœa general malaise stomatitis, and proctitis They occurred in 26 per cent. of the series.

It is interesting to compare Forestier and Certonciny's analysis of their recent series (1936) of 50 cases of chronic progressive polyarthritis all of 1–2 years duration before they came under treatment with gold These patients have all been observed over a minimum period of three years and had received at least four courses of gold This series they state represent their *least* satisfactory patients; the most satisfactory being those who respond after 1–2 courses of injections In this series 40 per cent showed some accident at some time none being fatal although 4 of these patients were over 70 (one aged 83 having received 0 g in all without harm!) Each course in this series averaged 1·5–3·0 g of gold The results of this prolonged therapy are expressed by the authors as follows:—

Good or very good	64%
Moderate	28
Poor or nil	8%

In Hartfall and Garland's series (1936) of 374 cases they report:—

Marked improvement or cure	77·8
Slight improvement	15%
Nil	5·8%
Worse	0·3
Died	1·3%

The complications discussed by the former authors include in addition to those already mentioned purpura jaundice which is rare but always serious pruritus eczematous patches, and herpes zoster They mention that they have never seen the arthritic condition of a patient made worse by gold although they have several times seen old troubles which they do not specify precisely exacerbated The various accidents affecting the skin and mucous membranes comprised 27 per cent of their total complications, and occurred mostly between the third and fifth courses of treatment They mention the occurrence of albuminuria also, but like Crosby (1936) agree with our own view that this sign, in the absence of symptoms or of a raised blood-urea, is of little importance and need not be an indication to interrupt the course

From a study of our cases and of those reported we believe that the contra indications for gold therapy, apart from obvious disease of the chief viscera, may be comprised practically under the headings of severe anæmia and eczema

Although it seems clear that certain persons possess a special sensitivity to gold, these are the exception and symptoms may manifest themselves even after the first injection The vast majority *of complications however do not occur until a* considerable amount of gold has been given This being so it is desirable to have some indication that "saturation point" is being approached. We believe that there is as yet no such test that is capable of routine application, although Shackle believes that a rise in the eosinophil count indicates the onset of cutaneous complications, a statement denied by Coste (1933) and Bourderon (1932) Denier (1935) has also suggested the value of infra red photography and of Wood's glass in this connexion, while Coste *regards a slight prolongation of the bleeding time* as being significant of a hæmorrhagic tendency

It is generally stated that gold may lead to a secondary anæmia and that an early manifestation of this may be a punctate basophilia Griffiths and Race (1935) found this in 16 of 21 cases investigated, although in none of our cases have we been able to confirm this observation

TREATMENT OF COMPLICATIONS

Our experience of the more severe complications of gold therapy is luckily limited. It seems, however, that prophylaxis is generally more valuable than curative treatment Dermatitis of the exfoliative type has in our experience usually lasted three months whatever treatment is employed.

Methods of prophylaxis include the routine administration of liver, calcium, and glucose It must also include reduction of dosage and the proper spacing of the injections when necessary

Methods of treatment will also include liver and calcium therapy, increase in the fluid intake, and cessation of gold injections For skin complications sodium hypophosphite may be given intravenously, 10 c cm of freshly prepared 20 per cent solution being administered daily Calcium gluconate or chloride may also be given intramuscularly in 1 per cent solution Autohæmotherapy is recommended by some authorities (Pèrles 1936) In addition to these measures a protective or anæsthetic ointment should be used, and it has seemed to us that if the affected parts can be protected from light the rash will often retrogress more quickly

Results of Treatment

A series of 51 cases has been observed and analysed over a period varying from six months to four years The results are given in the Tables The difficulty of providing a comparable control series has seemed insuperable, and this has accordingly not been attempted systematically A large number of cases of similar type have been seen during the same period, however, and treated by other methods, and our impression of the results obtained in the two series of cases is given Moreover, a considerable number of the earlier cases were given gold only as a last resort, *after all other methods had failed to check* the progress of the disease, this fact in itself is a form of control for the gold treatment *administered* subsequently

TABLE I

Duration of Disease and Amount of Treatment

—	No of cases	Apparently cured or much improved	Im proved	No improve ment
Duration—		%	%	%
Over 5 years	19	9 (48)	9 (48)	1 (4)
Under 5 years	32	20 (60)	9 (33)	3 [illegible]
Under 1 year*	14	8 (57)	6 (43)	0 (0)
Amount of gold—				
More than one course	18	13 (72)	3 (18)	2 (10)
One course or less	*33*	*15 (45)*	*16 (49)*	2 (6)

* The great majority of apparent cures fell into this group

TABLE II

Complications of Gold Treatment

Sex and age	Duration of arthritis	Type of complication	Result on arthritis
M 62	1 year	Severe exfoliative dermatitis	Arthritis cured
F 51	15 years	Diarrhœa after any dose over 0 1 g	Very much better
F 59	7 "	Malaise	Much better
F 54	9 "	*Transient rash once* ? due to gold	"
F 59	2 "	Stomatitis and proctitis	Better
F 59	2 "	Papular rash	"
F 53	6 "	Old standing diarrhœa exacerbated	"
M 51	1 year	Malaise	"
M 46	4 months	Exfoliative dermatitis and stomatitis	Apparently cured
F 38	6 years	Diarrhœa	Better

Complications occurred above the age of 50 in 80 % of cases, other cases all over 38 years All cases were improved in spite of complications

TABLE III

Effect of Treatment on Sedimentation-rate (B.S R)

Result	No of cases	Average duration of treatment	*Average fall* of B.S R (mm)
Much improved	29	5½ months	37 7
Improved	18	4 "	17
No improvement	4	5½ "	8

ANALYSIS —In this series 13 (26 per cent) were males and 38 (74 per cent) females their ages varied from twenty to sixty eight The rheumatoid type group of the Royal College of Physicians' classification included 90 per cent of the cases, 2 of which gave a previous history of gonorrhœa, 6 per cent of *cases were* of spondylitis ankylopoietica and 4 per cent of peri arthritis—that is, painful joints without conspicuous radiographic changes In 23 per cent of cases toxic symptoms were noticed during the administration of gold There were *9 per cent who received three or more courses of gold,* a course being equivalent to 1 0–1 5 g 11 per cent received two courses, 54 per cent received one course, and 26 per cent received less than one course

In the series we obtained the following results —

Great improvement or cure	58 %
Improvement	36 %
No improvement	6 %

These figures represent improvement in the *rheumatoid and peri arthritis groups, improvement* in the spondylitis cases being negligible—a point also noticed by Bach (1936)

The sedimentation rate —A study of the blood sedimentation rates (Westergren) showed that in the majority of cases (60 per cent.) there was a definite drop in the rate during and after treatment In 9 per cent. of the cases there was a preliminary rise after gold injections started which went on to a fall a point we think of importance, as a temporary *rise in the rate should not necessarily be regarded* as an indication of failure of treatment In 18 per cent. no fall was noticed and in 4 per cent. the sedimentation rate has continued to rise. Where there was a fall it corresponded with those cases that were to show a clinical improvement and it often preceded it In two cases of the series a sedimentation rate estimated some time after the last injection showed that this was rising again although subjectively the patient reported good health and no recurrence of symptoms. This probably is an indication for the continuation of small doses of gold at regular intervals, a maintenance dose being found just as in the case of liver therapy for pernicious anæmia.

Rheumatoid arthritis is known to be generally *progressive but spontaneous remissions* are known to occur although comparatively infrequently (Forestier estimates these in cases of one year's duration at 2 per cent.) Fifty-eight per cent. of cases that improved seems to be too many to be due to spontaneous remission and it would be a curious coincidence that they had all occurred during gold treatment From our figures improvement does not seem directly dependent on dosage The individual reactions of patients to gold varies very greatly however and in those cases in which severe toxic symptoms supervened a great improvement in the arthritis resulted subsequently

In certain cases an estimation of the sedimentation rate was prevented by difficulty in venepuncture which in two cases was due to a dermatitis and this would indicate the need for a reliable micro method for estimating it from the capillary blood.

Summary

1 A series of 51 cases mostly of the rheumatoid arthritic type have been treated and observed over a *period of from 6 months to 4 years* Great improvement or cure has resulted in 58 per cent The three cases of ankylosing spondylitis included in this series have shown negligible improvement only

2 Clinical improvement was preceded in a majority of the successful cases by a fall in the blood sedimentation rate In a certain proportion of these, however this fall was preceded by a preliminary rise of variable duration In no case was there clinical improvement when the sedimentation rate failed to drop In certain cases indeed the approach of *relapse was seen to be preceded by a further rise* The sedimentation rate seems therefore to be of considerable importance in the prognosis of this type of case.

3 It seems that the clinical result achieved is not always directly related to the quantity of gold administered

4 Certain accidents may result from gold therapy The importance of these seems to have been over-estimated however in recent articles Unforeseen sequelæ occurred in 23 per cent of our cases *but only in 3 cases were these so severe that the* treatment had to be discontinued. Of these three 2 were cases of exfoliative dermatitis and the other of rectal spasm hæmorrhage and stomatitis The dermatitis cases lasted in spite of treatment for about three months and their arthritis was subsequently cured ; while the latter lasted for about ten days with temporary improvement in the *arthritis which subsequently relapsed. Gold was not* recommenced in this case It seemed that albuminuria when unaccompanied by further symptoms could be discounted.

Since 11 of these 12 cases with complications occurred in ambulant patients, it seems that hospitalisation at the outset of such treatment may be desirable where this is possible.

5 When treatment was unsuccessful the period of evolution of the disease before the gold therapy has been considerably longer than the average of those cases in which it proved successful. In certain of these cases a permanent rise in the sedimentation rate curve after a preliminary fall seems to suggest that a degree of tolerance of gold may be established

6 It is our impression that gold is the medicament of choice in early cases of the rheumatoid arthritic type when the sedimentation rate is raised. It seems that its rôle is to act upon the progressive and inflammatory elements and this being so it appears to be necessary to employ physical methods *in addition to deal with the cicatricial and mechanical* aspects that remain in the majority of cases when the former elements have been controlled.

Our thanks are due to the collaboration in this work of Drs F Bach T J O Reilly A C Elkin J H. Dunn, *M. Mautner C J Berkeley Way and E Gwynne* Evans also to Drs J W Shackle and F Kellett for carrying out the pathological examinations at the Red Cross Clinic for Rheumatism and the Hospital of SS John and Elizabeth

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STRIÆ ATROPHICÆ CUTIS

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ATTENTION has been directed recently to this condition by the reports from Parkes Weber (1935) *of two cases of* idiopathic striæ atrophicæ together with a brief review of other recorded cases and a summary of the causes He thought that the condition might be due to an insufficiency of cutis with perhaps a deficiency of elasticity which results in multiple cleavage to adjust to more rapidly growing parts beneath.

In an earlier report Weber (1917) recorded a case of bilateral pulmonary tuberculosis the right side being more extensively involved than the left Striæ atrophicæ were observed in the lower part of the left posterior thorax transverse to the long axis of the body This was attributed to the patient's lying usually on his left side for the skin would be stretched most in this part Siller

(1924) reported a case of striæ atrophicæ in which the lines were vertical, and limited to the regions of the arms and forearms, abdomen, and groin. Obesity, perhaps related to endocrine dysfunction, was discussed as a cause. Other factors considered were the possible disproportion between cutis and subcutis, and the rapid development of fat. A case of striæ patellaris, after enteric fever, was recorded by Rolleston (1927), who considered the abnormal trophic condition of the cutis mainly responsible, with possibly an associated increase in tension of the skin, due to the maintained flexion of the knees—a theory favoured by most authorities. The possible influence of the pituitary gland has been much discussed. The furrowing of the scalp, "which is deeply corrugated like that of a bulldog" is a well known feature of acromegaly (Boyd 1932). Here the striæ are due to redundancy of skin. In discussing such a case, Weber (1932) considered the possible relationship of pituitary disorder to the formation of idiopathic striæ, and elsewhere (1935a) suggested that in those cases of striæ associated with rapid growth at or following puberty, a temporary basophilic hyperpituitarism might be responsible. Alternatively, deficient hormonic activity of the pituitary gland might be responsible for insufficiency of cutis, leading to the formation of "vergetures" (Weber 1928)—a process somewhat akin to that seen in the hypopituitarism of Fröhlich's syndrome. It might be noted that striæ in young adolescents with obesity, which lessens or disappears with maturity and which is almost certainly due to a temporary endocrine upset, is a not unfamiliar clinical phenomenon. Goldsmith (1936) summarised the skin changes that might be associated with endocrine disorders, including the striæ albicantes (atrophicæ) of Fröhlich's syndrome, the "folding" of hyperplasia in acromegaly, and the purplish lineæ atrophicæ of Cushing's basophilic hyperpituitarism. Of this condition, Kaufmann (1929) states " The cause is an overstretching of the skin which has become less resistant. It is also thought that there may be growth asymmetry of the soft parts in relation to the growth of the bones of younger individuals, in analogy to the so called cutis verticis gyrata, a peculiar skin folding on the scalp—a consequence of incongruent disharmonic development of the scalp in relation to the underlying bones. This (occurrence of striæ) may be of practical interest in later life, as a sign of previous serious sickness." Dore (1936) remarks " The usual meaning of these lineæ is that the skin has been unduly stretched or pressed upon over some fairly long period of time, but they give no indication of the cause of the stretching. They are of a purple or livid colour at first, becoming paler in course of time. They show small cross wrinkles of epidermis at right angles to the axis of the linea, these wrinkles can be smoothed away by stretching the skin in a direction parallel to the linea, but return at once on relaxing the tension." Of particular interest in reference to the cases recorded below is the following further quotation " In pleural effusion, they (the striæ) occur in the posterolateral portion of the lower part of the thorax on the same side, whereas in unilateral pulmonary tuberculosis they are found on the opposite side, owing to the patient's lying on the unaffected part. In the semi reclining position, the skin is stretched in the lower dorsal region, and striæ occur in this part of the body."

In none of the many cases of pleurisy with effusion that have come under my observation have lineæ atrophicæ been noted, and, further, in the cases described below, it was found impossible to correlate definitely the attitude of the patient in bed with either the distribution of the pulmonary lesion, or the situation of the lineæ. The attitude appears to be determined not only by the site of the disease in the lungs, but also by subsidiary factors such as habit, inclination, or immediate surroundings.

Briefly, the causes to be considered are (1) maldevelopment insufficiency of cutis, with deficiency of elasticity, (2) rapid stretching due to tumour, obesity, growth, pregnancy, &c., (3) endocrine dyscrasia particularly pituitary abnormality, (4) toxic causes—e.g., tuberculosis, typhoid, cachectic states, &c.

From the embryology it is difficult to accept a deficiency of cutis as a primary factor, and probably the causation is multiple, the size and situation of the lineæ being determined by external physical factors, together with purely local conditions in the skin that determine the lines of cleavage.

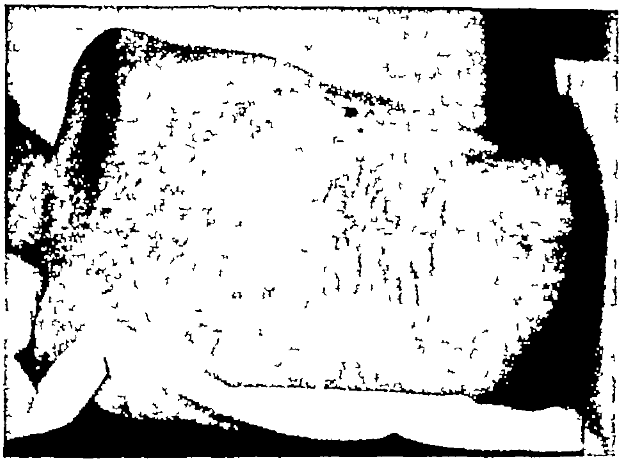

FIG. 1.—The striæ in Case 1.

A survey of a sanatorium population—in this case exclusively male—should favour the observation of such cases as are described below, pulmonary tuberculosis being a disease that pre eminently attacks young people at or about the growth period, and involves treatment that favours the development of striæ—i.e., prolonged rest. It is concluded that the tuberculous element plays little if any part in their causation.

CASE REPORTS

Case 1.—Aged 18 he was admitted in May, 1935, suffering from unilateral tuberculosis of the right lung. Treatment included a long period of rest in bed, and later pneumothorax therapy. In October striæ were first noticed on the back, over the dorsolumbar region, both sides of the body being involved, but the distribution slightly favouring the right side. The striæ were roughly transverse to the long axis of the body, as a photograph taken at this time clearly shows (Fig. 1). No increase in number was noticed, whilst the colour gradually faded from the initial purplish red, through a stage of pale pink in April, 1936, to ill-defined white streaks in June, 1936. When examined in August the original striæ could be recognised only with difficulty. General condition was good throughout.

There was a history of rapid growth at the age of 15. His height was 6 ft. 1 in. when first seen, and remained unchanged during the period of observation. His weight was 10 st. 1 lb. in December 1934, 8 st. 7 lb. in December, 1935, and had gradually increased again to reach 9 st. in August, 1936. The patient preferred no particular position when at rest in bed.

He volunteered the information that he had indulged to a considerable extent in bicycle racing during the years 1933 to 1935, and it is suggested that the maintenance of the attitude of full spinal flexion that this exercise demands may have helped to determine the site, if not the occurrence, of the striæ.

Case 2.—Aged 18 he was admitted in August, 193 suffering from bilateral disease the left lung being the more affected. His height was 6 ft and his weight 9 st 3 lb. Early in 1936 lineæ atrophicæ were observed in the dorsolumbar region similar to those in the previous case but forming four discontinuous linear markings to the left of the midline. They showed well the cross-wrinkling at right angles to the line of the lineæ described by Dore. Little change has been noted in their appearance up to the present time.

This patient emphatically preferred the right side when lying in which position the affected portion of skin was not stretched, but rather folded the striæ falling naturally into the sulci so produced. More recently it was noted that the skin over the left clavicular region, where muscular wasting was pronounced, had a slight folding the lineæ being roughly parallel to the clavicle.

General condition was poor with progressive emaciation.

CASE 3.—Aged 16 years admitted in January, 1936 suffering from bilateral disease of chronic type both lungs being about equally involved. Weight 7 st 9 lb height was 6 ft. Great improvement from the beginning of routine treatment with increase in weight. In July when the weight was 10 st striæ atrophicæ were noticed on the buttocks and thighs, symmetrical in distribution the direction on the anterior surface of the thighs being roughly at right angles to the long axis of the limbs whilst the striæ on the posterior surface were along the axis. Those on the buttocks tended to radiate from the coccygeal region. The striæ were linear and red and similar to those seen on the abdominal wall in pregnancy and were associated with the development of fat in the same region. A few weeks later there appeared one linea in the lower dorsal region in a direction transverse to the long axis of the body. It was mainly right-sided but crossed the midline. The length was 63 mm and the width at the broadest part was 4 mm. The colour was deep red with a covering of thin "papery" epidermis. The appearance was as of a cleavage in the subepidermal tissues.

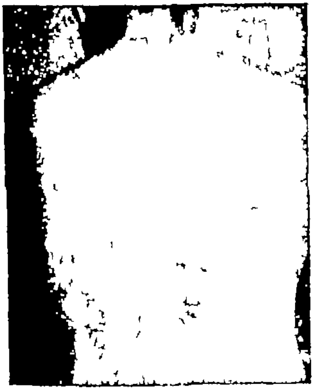

FIG. 2 (Case 4).—The striæ when fully developed

This patient lay mainly on his back, with a slight preference for the right side. His weight in August was 10 st 9 lb whilst his height was unchanged at 6 ft.

There was much to suggest a pituitary abnormality in this case: relative obesity with fat distribution rather of the female type, thighs buttocks, and breasts being particularly affected a full fat face; voice tended to be rather high pitched; and the limbs were somewhat disproportionally long. On the other hand the mental state was normal the external genitals appeared to be normally developed and X ray examination of the skull showed a normal pituitary fossa.

CASE 4.—Aged 22 years he came under observation suffering from bilateral disease the right lung being affected more than the left. His height was 5 ft 11 in and his weight, which a year before had been 11 st 7 lb., was 9 st 5 lb. About a month after admission striæ atrophicæ were seen in the dorsolumbar region, similar in type to those described above one lineæ occurred on the right side and three on the left. About two weeks later several lineæ shorter and less clearly defined had appeared on the right side whilst those previously seen were already fading. The striæ have now developed to the extent shown in Fig 2. The general condition was poor but improving. The patient preferred lying on the right side.

The cases here described have several features in common. The patients were all young men at or just past the growth period. They were all suffering from uncomplicated pulmonary tuberculosis. No symptoms were referable to the skin condition which was discovered during routine examination. In each case the blood gave no reaction to the Wassermann test.

One other case illustrating the somewhat similar condition of macular atrophy has been observed. The region affected was a roughly circular area of skin, overlying the lower dorsal spine in the midline and about 10 cm. in diameter. The macules were quite white and dull. The skin was somewhat dry but otherwise normal. This patient (who was unaware of the condition) was aged 26 his height was 6 ft and his weight, which had reached 12 st was just under 10 st.

THE SITE OF THE PULMONARY LESION AND THE ATTITUDE OF THE PATIENT

In order to ascertain whether the site of the lung disease influenced the position in which the patient reclined at rest a questionnaire was circulated amongst 100 sanatorium patients. The results of this investigation, together with the site of the lung lesion as determined by clinical and X ray examination are shown in the Table. It was difficult to draw any definite conclusions but it will be noted that in the unilateral group the right side was favoured in reclining although the majority of unilateral lesions were right-sided. Although some patients asserted that certain postures aggravated the cough (as would be expected) most were unable to give any reason for attitude at rest other than that they had always slept that way. In 3 cases only did the patient state that the onset of the illness had determined any alteration of the position of rest.

Results of Questionnaire in 100 Sanatorium Patients

Site of lung lesion	Position of rest				Total.
	Right.	Left	Indiff	Back.	
Unilateral—					
Right	11	9	2	2	24
Left	10	1	4	—	15
Bilateral—					
Approx equal	11	4	8	—	23
Right more than left	9	1	3	—	13
Left more than right.	10	3	5	—	18
Pleurisy with effusion—					
Right	2	1	—	—	3
Left	1	—	1	—	2
Bilateral	1	—	—	1	2
Total	55	19	23	3	100

SUMMARY

1 Four cases of striæ atrophicæ, observed in young men suffering from pulmonary tuberculosis are reported, with brief mention of one case of macular atrophy.

2 In one of these cases evidence of disordered pituitary function was observed

3 In determining the site of the striæ the reclining posture was of uncertain significance.

4 Tuberculosis has little if any effect in their causation

I wish to acknowledge my thanks to the matron of the Gresswell Sanatorium, who was responsible for the arrangement of the questionnaire and to Dr J Bell Ferguson, State Director of Tuberculosis, Victoria, for permission to publish the records of these cases

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THE TRYPTOPHANE REACTION IN THE CEREBRO-SPINAL FLUID

ITS VALUE IN THE DIAGNOSIS OF TUBERCULOUS MENINGITIS

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Examination of the cerebro spinal fluid is an important procedure in the diagnosis of tuberculous meningitis The presence of the tubercle bacillus is, of course, conclusive, but its successful demonstration varies with different workers Péhu, Dufourt, and Lafarcinade record a positive result in only 27 per cent of their series, whereas Hemenway (1911) and others claim success in 100 per cent In a consecutive series of 80 cases Ingham (1936) found the bacillus in 78 The successful demonstration of the organism, however, often demands very prolonged search and the chances of success often vary with the length of time expended Occasionally a positive result is obtained only after three or four hours at the microscope Such an inordinate expenditure of time is often impracticable, and so the attention of workers has been directed to other methods of examining the fluid with the object of discovering some specific reaction, easy of application and less time consuming, of these, the demonstration of tryptophane bodies seems the most promising

In 1927 Aiello directed attention to the presence of tryptophane bodies in the cerebro-spinal fluid (C S F) of cases of tuberculous meningitis and obtained a positive result in over 90 per cent of cases investigated No true positive results were obtained in other conditions, and he concluded that a negative reaction practically excludes the disease Brugi (1923) obtained a positive result in each of 12 cases of tuberculous meningitis, and no true positive result in 30 other conditions Lichtenberg (1932) applied the test to the C S F from 78 children and obtained positive results in 25, all of whom had tuberculous meningitis in 23 the clinical diagnosis being confirmed by finding the bacilli in the fluid either before or after death, the remaining 2 cases died but autopsy was refused, though there was no doubt about the diagnosis Among the 53 negative fluids no case of tuberculous meningitis was discovered Rosenblatt (1934) obtained positive reactions in 12 cases of tuberculous meningitis, and a control group of 45 fluids from various other conditions gave no true positive results Schumacher (1934) obtained 100 per cent positive results in 32 cases of the disease In a control series of 82 specimens one true positive reaction was given—a case of cerebral tumour In a series of 19 cases of tuberculous meningitis, Bock (1936) found the test positive in each In a control series of 97 clear fluids from other conditions he obtained negative reactions, and 3 purulent fluids (2 meningococcal and 1 staphylococcal meningitis) gave 'false positive" results

All the above investigators found that "false positive" reactions occurred in purulent, hæmorrhagic or xanthochromic fluids regardless of cause, and concluded that the test is only applicable to *clear* fluids Inasmuch as the C S F in tuberculous meningitis is usually clear the test is not thus invalidated.

THE TEST

Three reagents are required (1) Hydrochloric acid, concentrated (2) Formaldehyde, 2 per cent aqueous solution, prepared fresh daily by making a 1 in 20 dilution of the stock 40 per cent formaldehyde (3) Sodium nitrite, 0 06 per cent aqueous solution, a 0 6 per cent stock solution should be prepared weekly and from this a dilution of 1 in 10 made at the time of examination Take 3 c cm of C S.F in a test-tube, add 15 c cm of the concentrated hydrochloric acid and 2 or 3 drops of the 2 per cent formaldehyde solution Shake and allow to stand for five minutes Gently float on 2 c cm of the sodium nitrite solution and again allow to stand

A positive reaction appears in two or three minutes as a delicate violet ring at the junction of the floating sodium nitrite solution with the subjacent fluid and persists for 15–30 mins or more The reaction is negative if no change occurs or only a faint yellowish ring appears at the junction The reaction is best observed by daylight against a white background Its intensity is in some measure quantitative, often being greater in well developed cases and increasing as the illness progresses In early cases the colour change is often delicate and especial care is necessary for its observation The whole test, including the preparation of fresh solutions, can be carried out in 20 mins and expert knowledge is not required.

The "false positive" reaction, which is only obtained in purulent, hæmorrhagic, or xanthochromic fluids irrespective of their cause, appears as a purplish ring at the fluid junction, deeper in colour, thicker and more easily seen than the true reaction, and in many cases diffusing into the fluids both above and below

RESULTS OF THE TEST

The C S F from 172 consecutive cases of various diseases have been studied.

In 29 the fluids were purulent, hæmorrhagic, or xanthochromic and so were considered unsuitable for the test, on examination they gave, as was to be expected, a "false positive" reaction Of these there were 13 purulent fluids obtained from *meningococcal meningitis* (10 cases) pneumococcal meningitis (1 case), influenzal (Pfeiffer s bacillus) meningitis (1 case), and streptococcal meningitis (1 case), 5 were hæmorrhagic fluids from cerebral hæmorrhage (3 cases) and subarachnoid hæmorrhage (2 cases), and 11 were xanthochromic fluids, subarachnoid hæmorrhage (5 cases), spinal tumour (4 cases), and tabes dorsalis (2 cases)

There remained 143 fluids which, being clear, were suitable for applying the test The following results were obtained —

Of 32 cases of tuberculous meningitis, all but one were confirmed by demonstrating the bacilli in the fluid, 30 gave a positive tryptophane reaction and 2 a negative. The negative fluids in other respects were typical of tuberculous meningitis The first, from a baby aged

12 months, on the seventh day of the illness showed 68 cells (chiefly lymphocytes) per c.mm chlorides 510 mg per 100 c cm proteins 70 mg per 100 c cm ; and sugar 45 mg per 100 c cm The second, from a girl aged 6 on the fourteenth day of the illness had a cell count of 109 (chiefly lymphocytes) per c mm chlorides, 620 mg per 100 c.cm ; proteins 50 mg per 100 c.cm and sugar 40 mg per 100 c.cm In each case the tubercle bacillus was found after a search of roughly 15 mins.

Two of the positive cases are worthy of special mention.

CASE 1—A boy aged 14 had been suffering for one month from miliary tuberculosis of the lungs There were no signs of involvement of the nervous system and the C.S.F was clear and normal cytologically and chemically The tryptophane reaction proved negative The patient developed signs of meningitis—neck rigidity Kernig's sign, &c.—48 hours after examination of the fluid At this stage examination of the fluid revealed an increased cellular content some diminution in the chlorides and sugar but no tubercle bacilli even after searching for several hours The tryptophane reaction was now clearly positive

CASE 2—A boy aged 15 also with miliary tuberculosis of the lungs but no evidence of involvement of the nervous system, had been ill for 3 days when lumbar puncture revealed a clear and normal cerebro-spinal fluid No tubercle bacilli could be found after prolonged search and the tryptophane reaction was negative Three days later symptoms of meningitis appeared and examination of the fluid showed a greatly increased cell count, a high protein content and diminished chlorides and sugar Tubercle bacilli were demonstrable and the tryptophane test was now positive

There were 25 cases of tuberculosis (bones joints and chests) without involvement of the nervous system all of which gave a negative tryptophane reaction. In each of 61 cases of nervous diseases, other than tuberculosis of the meninges, brain or cord the fluid gave a negative reaction, the pathological conditions in these cases being as follows :—

Meningismus (6) acute aseptic meningitis (1) ; cerebral abscess (3) ; cerebral tumour (5) disseminated sclerosis (8) general paralysis (8) cerebral syphilis (4) ; tabetic optic atrophy (1) ; tabes dorsalis (4) ; epidemic encephalitis (1) ; idiopathic epilepsy (2) congenital syphilis (1) transverse myelitis (1) spinal tumour (1) ; dementia præcox (10) ; manic-depressive psychosis (5)

Finally the C S F from 25 cases which was normal in every respect—cells proteins chlorides and sugar—and from persons showing no evidence of tuberculosis or any disease of the nervous system gave without exception a negative tryptophane reaction.

THEORY OF THE REACTION

The chemistry of the reaction is unknown but Aiello suggests that it is due to the presence of free tryptophane that has been separated from the fibrin in the C S.F by the action of autolytic enzymes A consideration of the work of Fildes and Knight (1933) on the relation of tryptophane to the growth of bacteria may be of some significance They have shown that tryptophane is essential for the growth of certain bacteria in vitro whereas others will grow in media which contain none ; the latter they consider are able to synthesise tryptophane Examining a culture of human tubercle bacilli which for years had grown in the absence of tryptophane they found the substance in the bacterial bodies and therefore concluded that this organism can synthesise it In view of these findings therefore one might put forward the tentative suggestion that the tryptophane reaction in the clear cerebro-spinal fluid from cases of tuberculous meningitis depends upon the presence of tubercle bacilli in that fluid

SUMMARY AND CONCLUSIONS

An account of the tryptophane reaction in the cerebro-spinal fluid is given. The whole test can be performed in 20 mins It is suggested that the tryptophane is synthesised by tubercle bacilli in the fluid. *The test is inapplicable in purulent, hæmorrhagic, or xanthochromic fluids*—a "false positive" reaction being given. In all, the C S F from 172 consecutive cases of various diseases was studied In 30 out of 32 cases of tuberculous meningitis the reaction was positive. In all the remaining 111 clear fluids the test proved negative

In a clear cerebro spinal fluid, therefore, a positive tryptophane reaction is highly characteristic of tuberculous meningitis

I am indebted to Prof A M Kennedy for his help in the preparation of this paper

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ANÆSTHESIA FOR INTRACRANIAL OPERATION

A NEW TECHNIQUE

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THE greatest bugbear of the neurological surgeon is vascular oozing which may so obscure the field of operation as to render his task difficult or even impossible. In anæsthesia for intracranial operations it is the imperative duty of the anæsthetist to employ a technique whereby congestion and vascular oozing are reduced to a minimum.

At the present time three methods are commonly used :

(*a*) Local infiltration with Novocain only
(*b*) Basal anæsthesia with Avertin combined with local infiltration ; and
(*c*) Nitrous oxide and oxygen administered by the endotracheal technique

Of these three methods the first is undoubtedly the best, but the mental strain is too great for most patients and many surgeons. The second method is quiet and relatively free from vascular congestion so long as the airway is kept free—not always an easy matter It has the disadvantage that the basal anæsthetic may wear off before the operation is finished, in which case general anæsthesia has to be administered in addition There is also real danger that an unexpected severe hæmorrhage may so deplete the patient's vitality that a light basal narcosis suddenly becomes transformed into a dangerously deep coma and the anæsthetist can do very little about it In any case the respiratory and other vital medullary centres may already be depressed by intracranial disease and I prefer to employ light premedication such as Omnopon gr ¼ with scopolamine gr 1/150, or atropine gr 1/120 an hour before operation

The third method, endotracheal nitrous oxide and oxygen, has the very great advantage that perfect control may be exercised over the patient, while maintaining a light stage of anæsthesia Indeed, Magill's inhalational endotracheal technique represents the greatest advance made in anæsthetic technique during the present century Unfortunately, nitrous oxide administered by the "closed" technique always creates a certain amount of vascular congestion, even with the most skilful administration this congestion may be negligible in general surgical procedures, but in an intracranial operation the resultant vascular oozing may seriously interfere with the success of the operation, besides endangering the life of the patient

The ideal medium for intracranial anæsthesia s, in my opinion, the Magill wide bore endotracheal tube, while the *circuit should be open to the outside* air, in order to reduce congestion to the minimum The following method devised by myself provides what is virtually "open" anæsthesia, without any rebreathng bag, expiratory valve, or other obstruction to free respiration By this method the patient breathes ordinary fresh air, supplemented by a continuous flow of oxygen at the rate of three or four litres a minute, to which is added the minimal amount of ether or chloroform vapour to maintain anæsthesia

The apparatus required is very simple, and consists of a metal T piece connected by a short piece of rubber tubing and a metal angle piece, to a Magill endotracheal tube (Fig 1) One limb of the T piece is connected to Boyle's or any apparatus delivering a continuous flow of oxygen with ether or chloroform vapour The other limb s open to the outside air, and forms an outlet through which to and fro respiration takes place To obtain the best results, a length of rubber tubing not less than one centimetre in inside diameter should be attached to the outlet, this may be attached by means of adhesive strapping to some convenient part of the anæsthetic table A thin piece of gauze, similarly attached near the open end of the tube, will be blown to and fro by the patient's respirations, thus serving as a useful indicator to the anæsthetist

The principle is similar to the Clausen Evans airway for intrapharyngeal anæsthesia In theory, the tubing attached to the outlet forms an obstruction to respiration, but, in practice, this appears to be of no significance Indeed, the quietness of respiration and absence of vascular congestion resulting from the T-piece technique have been a revelation to myself and others who have witnessed it The objection that chloroform and ether are toxic agents is also not borne out in clinical practice, patients anæsthetised by this method make an exceptionally good post operative recovery, and less shock is seen at the end of a long operation than when nitrous oxide and oxygen have been administered The reason is not far to seek With the T piece method the patient has free communication with the outside air, and is consequently able to breathe under practically normal physiological conditions throughout the longest operation Lastly, and perhaps most important of all, the relative absence of vascular oozing ensures that the patient loses as little blood as possible

CASE REPORTS

The following are the accounts of three intracranial operations on patients anæsthetised by the T piece technique, two of these were consecutive

CASE 1 —A woman aged 38 Operation (Dec 24th) extirpation of adenoma of pituitary gland Premedication atropine gr 1/120 an hour before operation Induction evipan sodium 4 c cm followed by gas-oxygen ether Subsequent anæsthesia oral intubation with size 8 Magill tube Oxygen with minimal chloroform by T piece technique for 50 minutes, while diathermy was being used Oxygen with minimal ether during remainder of operation

Remarks —Despite the fact that she was a big, obese woman, the operative field was remarkably free from vascular congestion The tumour was enucleated without difficulty, the operation being completed in 2 hrs 10 mins At the end the blood pressure was only 3 mm lower than at the start, her colour was excellent, and there was no sweating or pallor The respiratory rate remained constant throughout The pulse rate was rapid, but not unduly so considering the magnitude of the operation (Fig 2)

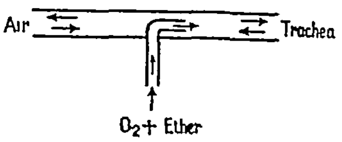

FIG 1.—The T piece

Progress —She recovered consciousness less than an hour after operation, vomited once, very slightly Next morning she was bright and well the nursing staff were emphatic that her general condition was better than in other similar cases Subsequent recovery was uninterrupted and without complications

CASE 2 —A youth aged 19 Dec 23rd: section of sensory root of fifth nerve for pain in area of distribution of the left trigeminal nerve, after tooth extraction some months before, and complicated by what was thought to be a carcinoma involving the temporal bone Premedication omnopon gr ⅓ with atropine gr 1/120 an hour before operation Induction evipan sodium 6 c cm followed by gas-oxygen ether Subsequent anæsthesia nasal intubation by "blind" method, a size 7 Magill tube being used Oxygen with minimal chloroform administered by T piece technique throughout operation

Remarks —On opening the left middle fossa extensive carcinomatous growth was found The tumour had broken through the temporal bone and was so widespread that operation by this route had to be abandoned After closing the opening he was turned over on to his face and the posterior fossa explored The operative field was unusually dry and the sensory root of the fifth nerve was exposed and divided with ease At the end of the operation which took three hours, his general condition was very good The chart readings remained at a constant level, except during the period between the two operations, when he was being turned over on to his face (Fig 3)

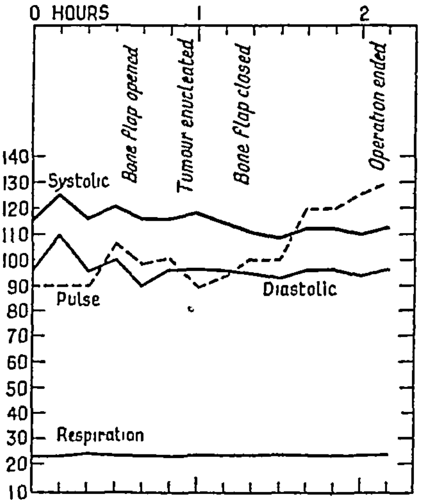

FIG 2 (Case 1) —Operation chart showing blood pressure pulse and respiration rate during intracranial operation

Progress —He was able to talk rationally half an hour after the operation He vomited once only, and subse quent recovery was uneventful Naturally the ultimate prognosis is bad.

CASE 3 —Another patient with trigeminal neuralgia was operated upon (through the middle fossa) in a similarly successful manner The patient was a thick necked purple-faced man of 74, of the type that usually puts up a strenuous resistance to general anæsthesia He was induced with evipan sodium and a little chloroform on an open mask. The operation lasted two hours during which 2 drachms of chloroform were given by the T-piece This was rather less than the amount usually required This patient gave no trouble whatsoever and was sitting up in bed next morning reading the paper Ten days later he was discharged from hospital completely cured

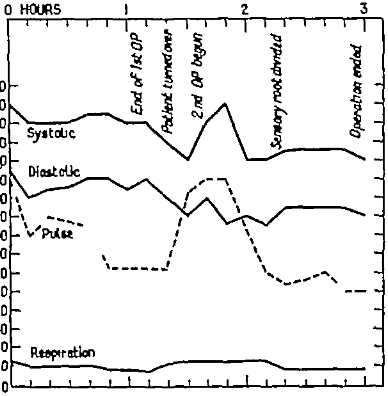

FIG 3 (Case 2) —Operation chart during intracranial operation

OTHER APPLICATIONS

The T piece technique may also be employed as an alternative method of endotracheal anæsthesia in other surgical operations, when closed gas-oxygen anæsthesia is contra-indicated. It is especially valuable in operations for repair of hare lip or cleft palate in newly born babies and young children Oxygen with minimal ether is administered and the excellent colour and easy respirations compare most favourably with the ashy grey pallor and rapid breathing sometimes seen when nitrous oxide is administered to young babies

CONCLUSION

I do not suggest that chloroform or ether should replace nitrous oxide-oxygen for routine anæsthesia The non toxic properties of nitrous oxide render it a most valuable anæsthetic agent *so long as it is reserved for suitable cases* After all it is the duty of the anæsthetist to adapt the anæsthetic to the patient not the patient to the anæsthetic and there are occasions when long continued anoxæmia may ultimately harm the patient more than the very slight toxic effects of a competently administered ether or chloroform anæsthetic. Cyclopropane is outside the scope of this article since it is quite unsuitable for intracranial anæsthesia Vinyl ether is a possibility but is still in the experimental stage

I am greatly indebted to Mr A. R. D Pattison neurological surgeon to the Newcastle General Hospital and the Sunderland Corporation for allowing me to publish the case record A special T piece as described in the foregoing paper may be obtained in two sizes from Messrs A Charles King 34 Devonshire-street, London W

Clinical and Laboratory Notes

VITAMIN B_1 AND DIPHTHERIA

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THE clinical resemblance between the late stages of diphtheria poisoning and beri beri is very obvious as both show anorexia circulatory failure and poly neuritis On the supposition that the diphtheria toxin might destroy vitamin B_1 in the organism feeding experiments with vitamin B_1 concentrates were employed in this hospital in 1931 during convalescence but the results showed that the vitamin B_1 given in this form had no effect on this condition Russell (1930) showed that in cases of polyneuritis due to other causes the parenteral administration of vitamin B_1 concentrates was successful in curing the condition although giving it by mouth was unsuccessful The work of Prof. Peters and his colleagues (1936) showed that vitamin B_1 was concerned in the later oxidation changes of glucose and if this vitamin was deficient an increase of pyruvic acid could be demonstrated in the tissues and blood of experimental animals

On these grounds we considered that a further investigation on these points might be of value especially as Hector (1926) working in this hospital, showed there was a considerable defect in the storage and the ability of the tissues to utilise glucose in diphtheria. We therefore carried out a series of experiments on animals and a clinical investigation

ANIMAL EXPERIMENTS

One series of analyses was carried out on normal guinea pigs bled to death. Another series of guinea pigs was given 4 minimum lethal doses (m.l.d) of diphtheria toxin (kindly supplied by Dr R A O Brien) and estimations of pyruvic acid were made on the blood taken shortly before death

For the pyruvate determinations blood was deproteinised by precipitation with trichloroacetic acid (Thompson and Johnson 1935) and pyruvic acid estimated in the filtrate colorimetrically by the 2 4-dinitrophenyl hydrazone method (Peters and Thompson 1934)

We then attempted to produce the chronic form of the disease by giving 4–12 m l.d. followed four hours later by 750 units of concentrated antitoxin, which prevented death in the animals given not more than 4 m l.d of toxin recovery taking place slowly The survivors showed no polyneuritis one of these was bled after 14 days and the pyruvate estimated. The results are given in the Table

Pyruvic Acid (mg per 100 g blood)

Normal animals	Animal given 4 m l d toxin	Animal given toxin + antitoxin
3 18	2 45	4 31 (1* m l d toxin)
3 11	2 10	3 31
3·03		3 16 (4 m l d toxin)

Figures from the injected animals showed no appreciable deviation from the normal figures

The heart and leg muscles of some of both the normal and infected animals were tested qualitatively with scopolamine gr 1/150, or atropine gr 1/120 an hour before operation

The third method, endotracheal nitrous oxide and oxygen, has the very great advantage that perfect control may be exercised over the patient, while maintaining a light stage of anæsthesia Indeed, Magill's inhalational endotracheal technique represents the greatest advance made in anæsthetic technique during the present century Unfortunately, nitrous oxide administered by the "closed" technique always creates a certain amount of vascular congestion, even with the most skilful administration this congestion may be negligible in general surgical procedures, but in an intracranial operation the resultant vascular oozing may seriously interfere with the success of the operation, besides endangering the life of the patient

The ideal medium for intracranial anæsthesia is, in my opinion the Magill wide bore endotracheal tube, while *the circuit should be open to the outside air*, in order to reduce congestion to the minimum The following method devised by myself provides what is virtually "open" anæsthesia, without any rebreathing bag, expiratory valve, or other obstruction to free respiration By this method the patient breathes ordinary fresh air, supplemented by a continuous flow of oxygen at the rate of three or four litres a minute, to which is added the minimal amount of ether or chloroform vapour to maintain anæsthesia

The apparatus required is very simple, and consists of a metal T piece connected by a short piece of rubber tubing and a metal angle piece, to a Magill endotracheal tube (Fig 1) One limb of the T piece is connected to Boyle's or any apparatus delivering a continuous flow of oxygen with ether or chloroform vapour The other limb is open to the outside air, and forms an outlet through which to and fro respiration takes place To obtain the best results a length of rubber tubing not less than one centimetre in inside diameter should be attached to the outlet this may be attached by means of adhesive strapping to some convenient part of the anæsthetic table A thin piece of gauze, similarly attached near the open end of the tube, will be blown to and fro by the patient's respirations, thus serving as a useful indicator to the anæsthetist

The principle is similar to the Clausen Evans air way for intrapharyngeal anæsthesia In theory, the tubing attached to the outlet forms an obstruction to respiration, but, in practice, this appears to be of no significance Indeed, the quietness of respiration and absence of vascular congestion resulting from the T piece technique have been a revelation to myself and others who have witnessed it The objection that chloroform and ether are toxic agents is also not borne out in clinical practice, patients anæsthetised by this method make an exceptionally good post-operative recovery, and less shock is seen at the end of a long operation than when nitrous oxide and oxygen have been administered The reason is not far to seek With the T piece method the patient has free communication with the outside air, and is consequently able to breathe under practically normal physiological conditions throughout the longest operation Lastly, and perhaps most important of all, the relative absence of vascular oozing ensures that the patient loses as little blood as possible

CASE REPORTS

The following are the accounts of three intracranial operations on patients anæsthetised by the T piece technique, two of these were consecutive

CASE 1 —A woman aged 38 Operation (Dec 24th) extirpation of adenoma of pituitary gland Premedication atropine gr 1/120 an hour before operation Induction evipan sodium 4 c cm followed by gas-oxygen ether Subsequent anæsthesia oral intubation with size 8 Magill tube Oxygen with minimal chloroform by T piece technique for 50 minutes, while diathermy was being used Oxygen with minimal ether during remainder of operation

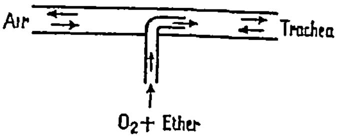

FIG 1.—The T piece

Remarks —Despite the fact that she was a big obese woman, the operative field was remarkably free from vascular congestion The tumour was enucleated without difficulty the operation being completed in 2 hrs 10 mins At the end the blood pressure was only 3 mm lower than at the start, her colour was excellent, and there was no sweating or pallor The respiratory rate remained constant throughout The pulse rate was rapid, but not unduly so considering the magnitude of the operation (Fig 2)

Progress —She recovered consciousness less than an hour after operation, vomited once, very slightly Next morning she was bright and well the nursing staff were emphatic that her general condition was better than in other similar cases Subsequent recovery was uninterrupted and without complications

CASE 2 —A youth aged 19 Dec 23rd: section of sensory root of fifth nerve for pain in area of distribution of the left trigeminal nerve, after tooth extraction some months before, and complicated by what was thought to be a carcinoma involving the temporal bone Premedication omnopon gr ⅓ with atropine gr 1/120 an hour before operation Induction evipan sodium 6 c cm followed by gas oxygen-ether Subsequent anæsthesia nasal intubation by "blind" method, a size 7 Magill tube being used Oxygen with minimal chloroform administered by T piece technique throughout operation

Remarks —On opening the left middle fossa extensive carcinomatous growth was found The tumour had broken through the temporal bone and was so widespread that operation by this route had to be abandoned After closing the opening he was turned over on to his face and the posterior fossa explored The operative field was unusually dry, and the sensory root of the fifth nerve was exposed and divided with ease At the end of the operation, which took three hours, his general condition was very good The chart readings remained at a constant level, except during the period between the two operations, when he was being turned over on to his face (Fig 3)

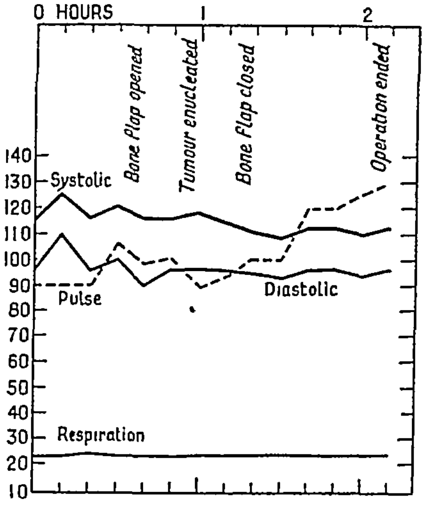

FIG 2 (Case 1) —Operation chart showing blood pressure pulse and respiration rate during intracranial operation

Progress —He was able to talk rationally half an hour after the operation He vomited once only, and subse quent recovery was uneventful Naturally the ultimate prognosis is bad.

CASE 3—Another patient with trigeminal neuralgia was operated upon (through the middle fossa) in a similarly successful manner The patient was a thick necked purple faced man of 74 of the type that usually puts up a strenuous resistance to general anæsthesia. He was induced with evipan sodium and a little chloroform on an open mask The operation lasted two hours during which 2 drachms of chloroform were given by the T piece This was rather less than the amount usually required This patient gave no trouble whatsoever and was sitting up in bed next morning reading the paper Ten days later he was discharged from hospital completely cured

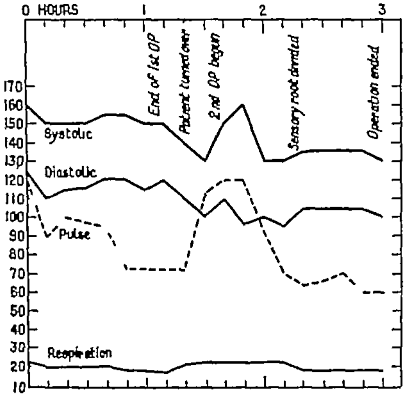

FIG 3 (Case 3)—Operation chart during intracranial operation

OTHER APPLICATIONS

The T piece technique may also be employed as an alternative method of endotracheal anæsthesia in other surgical operations, when closed gas oxygen anæsthesia is contra indicated It is especially valuable in operations for repair of hare lip or cleft palate in newly born babies and young children Oxygen with minimal ether is administered and the excellent colour and easy respirations compare most favourably with the ashy grey pallor and rapid breathing sometimes seen when nitrous oxide is administered to young babies

CONCLUSION

I do not suggest that chloroform or ether should replace nitrous oxide oxygen for routine anæsthesia. The non toxic properties of nitrous oxide render it a most valuable anæsthetic agent *so long as it is reserved for suitable cases* After all it is the duty of the anæsthetist to adapt the anæsthetic to the patient not the patient to the anæsthetic and there are occasions when long-continued anoxæmia may ultimately harm the patient more than the very slight toxic effects of a competently administered ether or chloroform anæsthetic Cyclopropane is outside the scope of this article since it is quite unsuitable for intracranial anæsthesia Vinyl ether is a possibility but is still in the experimental stage

I am greatly indebted to Mr A. R. D Pattison, neurological surgeon to the Newcastle General Hospital and the Sunderland Corporation for allowing me to publish the case record A special T piece as described in the foregoing paper may be obtained in two sizes from Messrs A. Charles King 34 Devonshire-street London, W

Clinical and Laboratory Notes

VITAMIN B_1 AND DIPHTHERIA

BY B A. PETERS M.D Camb D.P H
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RESEARCH BIOCHEMIST AT THE HOSPITAL

THE clinical resemblance between the late stages of diphtheria poisoning and beri beri is very obvious as both show anorexia circulatory failure and poly neuritis On the supposition that the diphtheria toxin might destroy vitamin B_1 in the organism feeding experiments with vitamin B_1 concentrates were employed in this hospital in 1931 during convalescence but the results showed that the vitamin B_1 given in this form had no effect on this condition Russell (1936) showed that in cases of polyneuritis due to other causes the parenteral administration of vitamin B_1 concentrates was successful in curing the condition, although giving it by mouth was unsuccessful. The work of Prof. Peters and his colleagues (1936) showed that vitamin B_1 was concerned in the later oxidation changes of glucose and if this vitamin was deficient, an increase of pyruvic acid could be demonstrated in the tissues and blood of experimental animals

On these grounds we considered that a further investigation on these points might be of value especially as Hector (1926), working in this hospital showed there was a considerable defect in the storage and the ability of the tissues to utilise glucose in diphtheria We therefore carried out a series of experiments on animals and a clinical investigation

ANIMAL EXPERIMENTS

One series of analyses was carried out on normal guinea pigs bled to death Another series of guinea pigs was given 4 minimum lethal doses (m.l.d) of diphtheria toxin (kindly supplied by Dr R. A O Brien) and estimations of pyruvic acid were made on the blood taken shortly before death

For the pyruvate determinations blood was deproteinised by precipitation with trichloroacetic acid (Thompson and Johnson 1935) and pyruvic acid estimated in the filtrate colorimetrically by the 2 4-dinitrophenyl hydrazone method (Peters and Thompson 1934)

We then attempted to produce the chronic form of the disease by giving 4–12 m l.d followed four hours later by 750 units of concentrated antitoxin which prevented death in the animals given not more than 4 m l.d. of toxin recovery taking place slowly The survivors showed no polyneuritis one of these was bled after 14 days and the pyruvate estimated The results are given in the Table

Pyruvic Acid (mg per 100 g blood)

Normal animals	Animal given 4 m.l d toxin	Animals given toxin + antitoxin
3·19	3·45	4·34 (12 m l d toxin)
3·11	2·40	3·34 ,,
3·63		3·1 (4 m l d toxin)

Figures from the infected animals showed no appreciable deviation from the normal figures

The heart and leg muscles of some of both the normal and infected animals were tested qualitatively for pyruvate by means of sodium nitroprusside (Case and Cook 1931) Except in one or two isolated cases, the reaction was always negative

CLINICAL EXPERIMENTS

Examination of the bloods of two normal persons and two severe cases of diphtheria suffering from paralytic sequelæ were also examined, the results were —

	Mg pyruvic acid per 100 g blood	
Normal	1·05	1 26
Paralysis cases	1 44	2 18

Again no considerable alteration from the normal was shown

A series of 10 severe cases of diphtheria was given sub cutem daily doses of 560 units of vitamin B_1 concentrate (Roche Products Ltd) from the seventh to the twenty eighth day of disease This treatment had no effect on the incidence of paralysis, as two had paralysis of the palate and ciliary muscles and two others showed an additional paralysis of the pharynx and diaphragm, both of which terminated fatally—one after a week in a Drinker respirator and the other very suddenly

CONCLUSIONS

It is thus obvious from the experimental and clinical results that the stage of glycolysis in which vitamin B_1 is concerned is not affected by the diphtheria toxin and no benefit arises in this condition from its administration

We are indebted to the Sir Halley Stewart Trust for grants towards the expenses of this work, to Dr D M Stone and Dr R T Cooke, of the Department of Preventive Medicine, Canynge Hall, Bristol, for carrying out the injections on the guinea pigs and to Mr F E Needs, *Bristol city analyst, for* allowing us working space in his laboratories

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OSTEOMYELITIS

BY WALTER BROADBENT, M D Camb , F R C P Lond
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OSTEOMYELITIS is a fulminating disease, which nearly always starts in an epiphysis Since the epiphysis is near a joint, it may be mistaken for rheumatic fever with disastrous results I have in past years seen in consultation two fatal cases of purulent pericarditis due to this error In one, a boy of 15, the lower epiphysis of the femur was involved, and it should have been easy to diagnose, as the swelling was all above the knee joint In the other, a child of 3, the osteomyelitis had started in the upper epiphysis of the femur, and must have been obscure at first, though it was clear when I saw it, there being a fluctuating swelling, and the femur was loose from its head

It should be easy to distinguish osteomyelitis from rheumatic fever, since, at the onset, only one point is involved, and that near a joint and not in it The face is flushed the tongue dry, the temperature high, and there is usually delirium at night , whereas, in rheumatic fever more than one joint is painful, the face is pale, the skin moist, the tongue large and flabby, the temperature rarely above 103° F , and delirium very unusual.

As illustrating the pace at which osteomyelitis progresses, I will quote two cases

Many years ago at the Royal Sussex County Hospital a child of 10, who was convalescing from a minor ailment, developed a temperature of 104° F on my visiting day, and complained of pain in his ankle I found a very tender spot over the lower epiphysis of his right fibula Diagnosing acute osteomyelitis, I told the house physician to *send for a surgeon at once* The *house physician, it being* his afternoon off, neglected to send for the surgeon until next morning By that time the whole of the lower half of the fibula was inflamed and it ultimately came away as sequestra, the child being in the hospital for about four months

The other case was that of a boy of 15 at school, who complained of feeling ill after lunch one day His temperature was found to be 105° F He was put to bed, a provisional diagnosis of influenza having been made His temperature at 6 P M was still 105°, and I was asked to see him He had no headache, but he looked very *poisoned, his pulse rate was 120* I found a small red swelling on the inner side of the left os calcis which was very tender on pressure, and decided that it was a case of *acute osteomyelitis of the os calcis* I had him moved to a nursing home at once, and Mr G W Beresford operated He found already a little pus and some bare bone, though *only six hours after the onset* He trephined a piece about the size of a thimble out of the os calcis The next day the temperature only went up to 102°, on the second day to 100 2°, and by the third day it was normal, and never rose above that again The wound was completely healed in five weeks, and the boy was able to walk about

Contrast this second case with that of a boy sent into the Brighton Infirmary as an acute rheumatism on the sixth day after he had begun complaining of pain in the right heel Dr S J Firth then rightly diagnosed acute osteomyelitis of the os calcis, and *the bone was cut down on and drained Unfortu*nately, with the six days' delay, a septicæmia affecting the bones had started An acute osteomyelitis of the right ulna developed, and some days later the left iliac bone was also attacked The ulna and the ilium were, of course, treated surgically, but the boy was desperately ill, and was only able to leave his bed after nine months He will be a permanent cripple with a deformed os calcis, an ankylosed hip joint, and an irregular newly formed ulna

It is really quite as important to operate at once on acute osteomyelitis as on a perforated appendix

LEPTOSPIRAL JAUNDICE
OCCURRING NATURALLY IN A GUINEA-PIG

BY NEIL MASON, M.B Liverp , D P H
GARRETT RESEARCH FELLOW IN BACTERIOLOGY, UNIVERSITY OF LIVERPOOL

ON Dec 2nd, 1936, a batch of twelve guinea pigs arrived at the City Laboratories, Liverpool, from a dealer The following *morning* one was found dead showing yellow staining of the ears and feet A post mortem examination revealed jaundice and petechial hæmorrhages into the skin, hæmorrhages into muscle and fasciæ, and " butterfly " hæmorrhages in the lungs Active leptospiræ were demonstrated by dark ground illumination in tissue emulsions made from the liver and kidneys

A guinea pig from stock was inoculated intraperitoneally with 1 c cm of liver emulsion *This animal* developed jaundice in five days and died in six, with an exactly similar post mortem picture to that of the first guinea pig. Leptospira morphologically similar to *Leptospira icterohæmorrhagiæ* were isolated in pure culture from the heart blood of both animals and were serologically identical with *L icterohæmorrhagiæ*.

Source of the Infection.—In reply to questions the dealer stated that there had been no case of jaundice amongst his staff or dogs that the food and water supply of the guinea pigs were protected against contamination by rats but that about ten days before the animals were sent to Liverpool rats had broken in and killed two or three guinea pigs. The infection was therefore most probably derived from a rat at the dealer's but there were no signs of injury to the animal, and there is insufficient evidence to decide whether it was acquired from a rat-bite or through contact with infected rats excreta.

Comment.—In the study of leptospiral infections guinea pig inoculation plays a very important part. The results of inoculation of *L icterohæmorrhagiæ* have not produced entirely uniform results. Taylor and Goyle (1931) failed to infect several guinea pigs with blood and urine from undoubted cases of Weil's disease. I have had experience of five cases where inoculation of emulsions of rat kidney in which active leptospiræ were seen by dark field examination failed to produce fatal infection in guinea pigs. When these animals were killed later their sera were found to agglutinate *L icterohæmorrhagiæ* in dilutions varying from 1/30 to 1/300. These failures may have been due to low virulence of the strains but they may also have been affected by the immunity of the guinea pigs which might conceivably have resulted from naturally acquired infections. Schüffner (1928) mentions the possibility of the spread of leptospirosis in guinea pig stock by unknown means. I have been unable to find any record of a natural infection in guinea pigs and the importance of recognising that it does occur has seemed to warrant that this case should be placed on record.

I desire to thank Prof H D Wright for the facilities and help given.

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MEDICAL SOCIETIES

SOCIETY OF MEDICAL OFFICERS OF HEALTH

AT a meeting of the Fever and School Medical Groups of this society when Dr H S BANKS vice-president of the fever group took the chair a *discussion on*

The Control of Whooping cough

was opened by Dr A B DONALD. He first summarised the reasons for believing that whooping cough was due to *B pertussis* the bacillus he said was serologically one specific type and while almost *constantly present in the acute stages of the illness* was absent in other illnesses and in health. Except in very few cases, mostly very young infants specific antibodies to the bacillus developed in the blood in the later stages of infection. The period of infectivity coincided with the period of expectoration of the bacillus as found by the cough plate method.

Pure cultures injected intratracheally into apes produced an illness similar to pertussis. Furthermore, when pure cultures of *B pertussis* had been instilled into the nasal cavities of 4 volunteers 2 developed typical whooping cough while the other 2 who had been protected with Sauer's vaccine did not. On the other hand Stocks had shown that the epidemiology of the disease was somewhat similar to that of measles; the infectiousness, the solid immunity the interstitial pneumonia the demonstration of inclusion bodies in penumonic lesions and degenerative lesions of nerve ganglia were stated to be indications of a virus infection. But hospital experience showed that pertussis seldom gave rise to cross infection in a ward as measles did; and if the organism was a secondary invader why was it so constantly present in the early stages?

In the belief then that the infection was solely due to *B pertussis* the speaker discussed the methods in use for the diagnosis of pertussis and the results obtained at the North Western Hospital. Dr Donald had been using three specific diagnostic tests. The first of these the cough plate was the principal and only certain method of early diagnosis. In this the patient coughed on to a Petri dish containing the Bordet-Gengou medium of *potato extract glycerol*, agar and defibrinated blood the latter being present in a proportion of 50 per cent as lower concentrations were not reliable. The plate was held about 4 in from the mouth and exposed to a number of barks. The colonies were subcultured and then typically looked like a streak of aluminium paint. The organisms were emulsified for agglutination tests and also stained by Gram's method showing the short cocco bacilli in clumps like a thumb print. Dr Donald showed by slides that a fair number of positive plates were obtained in the fourth week of infection. Negative dismissal plates had been used as a basis for the early *transfer of children to the* convalescent hospital.

The complement fixation test had been done on the serum of every patient admitted to the whooping cough wards and had been a very useful method of diagnosis in late cases. It served to indicate the approximate duration of the disease, being negative during the first two weeks doubtful or weakly positive in the third and usually positive from the fourth week onwards with a rising titre to the seventh or tenth. The antibody response was usually delayed in patients who developed secondary bronchopneumonia but even they eventually gave a positive complement *fixation test. As the test was found* to be negative in 8 convalescent cases by the thirteenth week on average it was thought to be probably only positive during active infection. In 1934 Bernholdt Thomsen had stated that the specific antibodies only showed that the subject had recently been under the stimulus of the specific antigen and not that he had recently suffered from infection. This had not been borne out by Dr Donald's experience. The test appeared therefore to be specific for active whooping cough with a few exceptions. About 30 to 40 sera giving strongly positive complement fixation tests were tested for agglutinins but all except one were completely negative although different strains and various methods of incubation were tried.

Skin tests performed by intracutaneous injection of a killed vaccine containing a thousand million organisms per cubic centimetre had confirmed the opinion that skin tests done with the whole organism were of little value No evidence of an initial leucopenia had been found from the blood counts carried out as a routine on admission, but a leucocytosis with relative lymphocytosis had been found in practically every uncomplicated case The return to normal in cases of whooping cough was very slow In July, 1936, Bell and Gold had shown that in contrast to other infectious diseases, the sedimentation rate was retarded during the acute stages of whooping cough Dr Donald had confirmed this in 46 cases and considered the test was of value as an early diagnostic sign.

Dr W GUNN said that while bacteriologists were agreed that the Bordet Gengou bacillus was invariably associated with whooping cough they were not certain about the possibility of an associated virus Some American workers had injected filtered material into the trachea of apes and produced a catarrh which might correspond to the initial catarrh of pertussis The application of Dr Donald's work lay in assisting early diagnosis The policy of the London County Council schools was no longer to put schools or dormitories into isolated quarantine but to put the children under observation and remove them as soon as symptoms appeared This policy was successful in day schools but might have to be revised for measles and pertussis in the resident schools Children with whooping cough might be infectious for from one to three weeks before they were excluded, by which time the disease had a firm hold on the school He had known the infection to persist for months or even a year, not in epidemic form but in three or four cases every few weeks He had recently been trying the cough plate method. His difficulties differed from those of the bacteriologist the schools were in country districts, the plates had to be kept cold before exposure and were liable to break in transport A package was being devised for taking Petri dishes so that they could be sent by post in this country as they were in Denmark. Special staff was required to handle the plates and to collect the product of the coughs on them He thought that soon the plate method might well be used extensively in schools Positive plates had been obtained in about one third of the cases at the fourth to sixth weeks and had been observed up to the twelfth, but that did not necessarily mean that the children were still infectious

Dr A R THOMPSON described his experiences with the skin test Vaccines of pertussis would only cause pustules which were of no significance, he had consequently tried the experiment of using non pathogenic bacteria of the same size, for this he had used *B prodigiosus* and had obtained much better reactions He had also tried endotoxin solutions In his experience the attack rate was not high and the infection did not go round wards, he thought that where that happened the possibility of an undetected case keeping up the infection should be considered The collecting of material on plates was so difficult that he had tried inducing coughs in order to obtain an early diagnosis

Dr T P PUDDICOMBE wondered what percentage of whooping cough cases never whooped, practitioners generally insisted on waiting for the whoop's appearance before making the diagnosis In schools the patients were still isolated for six weeks after the onset of cough and contacts for three The child who was out and about often progressed well while the child who was carefully treated developed broncho pneumonia

Dr R CRUICKSHANK said that the bacteriological work of pertussis was not easy, much depended on the technique of producing a really good medium, for instance, and blood was difficult to acquire, the actual picking off of colonies needed long experience He considered that to say that a child with a positive dismissal plate was not infectious was to deny all that we knew of carriers, the carrier need not transmit the illness but must be regarded as a potential source of infection

Dr A TOPPING pointed out that there were avirulent diphtheria bacilli, the presence of *B pertussis* did not therefore necessarily imply infectivity Hospital treatment of pertussis could not be as extensive as they wished while public opinion thought cases had to be kept in so long

Dr BANKS said he was glad that the difficulties of the cough plate method had been stressed, he had found it unreliable except in the hands of a few experts He had only obtained positive plates in 20 per cent of cases, although he had the help of a good laboratory He would like the bacteriologist to tell other workers which details were of vital importance in the technique, even after that, special experience would, he believed, be necessary for the work. He asked whether the time had not come to repeat Madsen and Sauer's work on preventive inoculation, resident schools were the ideal place for the experiment At the Park Hospital oxygen carbon dioxide inhalation had been tried as a form of treatment Dr Muir had tried oxygen with 7 per cent CO_2 to produce deep breathing for ten minutes three times a day, thinking that it might help to clear away mucus from the bronchi and to prevent broncho pneumonia He had been unable to draw any definite conclusion from those results, but the inhalations were apparently of real value for whooping cough cases which failed to resolve If the method prevented bronchiectasis as a sequela it was doing something The carbon dioxide caused spasm and cough and could be used to induce a cough, say, before a meal

MEDICO-LEGAL SOCIETY

AT a meeting of this society held on Feb 25th, Mr C AINSWORTH MITCHELL, D Sc, the president, being in the chair, Mr PAUL C DAVIE read a paper on

Silicosis An Administrative Experiment

He put forward the suggestion that the administrative structure of certain schemes made under the Workmen's Compensation (Silicosis) Acts might with advantage be extended After giving a brief description of the Acts and the schemes made under them, the speaker confined his attention to two schemes, which he aptly termed the "fully developed" schemes, for the refractories industry and the sandstone industry Under each of these schemes the whole industry was formed into a company which was responsible for meeting all claims for compensation in respect of workmen certified to be suffering from silicosis or silicosis with tuberculosis, or to have died from one of these diseases Claims were made against the whole industry, represented by the company, and not against an individual employer, and were met out of a fund subscribed by the industry Medical certificates were given only by a medical board, appointed by the Secretary of State, and claims were decided by an unpaid joint committee consisting of three employers' and three workers representatives, with an independent chair man By these means the usual court procedure for settling claims was entirely eliminated and so far as he knew this administrative structure was without precedent. A remarkable feature of these two schemes was the smoothness with which they had worked during 12 years in the case of the refractories industries scheme and 8 years in the case of the sandstone industry scheme The formation of such a scheme depended on the agreement of the industry concerned and its smooth working was possible only with the active coöperation of its members Although one industry for which such a scheme had been proposed had turned it down it seemed possible by suitable grouping to extend the principle of the fully developed scheme to industries in which at present a partially developed scheme applied The speaker emphasised the important effect such a scheme must have in urging an industry to adopt and improve all possible means of prevention The speaker discussed the finality of the certificate of the medical board, and commented on the possibilities for research into the course of the disease from the records and material collected He suggested that the system of medical boards might be extended to cover other diseases

In the course of discussion Dr S W FISHER of the Mines Department referred to the unequal distribution of silicosis amongst workers in coal mines in this country and suggested that this might be an obstacle to the adoption of a fully developed scheme for the coal mining industry —Dr G SLOT referred to the organisation for silicosis in South Africa, and Mr DAVIE in his reply said that in this country we owe much to the example and published experience of the South Africans and to the International Conference on Silicosis held in Johannesburg in 1930

BRITISH PSYCHOLOGICAL SOCIETY

MEDICAL AND EDUCATION SECTIONS

AT a joint meeting of these sections held on Feb 24th the chair was taken by Dr H CRICHTON MILLER, president of the medical section A discussion on

Sex Education

was introduced by Dr SUSAN ISAACS She emphasised that sex education was by no means the same thing as sex instruction and that the problem was not simply one of ignorance or knowledge of a series of external facts The child's feelings, wishes relations to people and aims in life were involved in sex education at all ages The object of sex education was to foster right attitudes wisdom and happiness Moreover it went on all through life whether conscious or not The question was not whether such education should be given but how it was to be given The child brought deep emotions to the problem The relation between the two parents was of overwhelming importance to him but he was concerned not with the actual act but with whether what father and mother did together was good or bad in the sense of his own feelings and fantasies whether it was life giving loving and creating or destroying and hating His impulses and his experiences prepared him for knowledge of the genital act The union and satisfaction at the breast prepared him for genital union and satisfaction To put pegs into holes was a profound natural impulse of little children Apparent ignorance was not a result of lack of experience and opportunity but of profound anxiety Many motives entered into that façade of ignorance the boy's love of his mother and fear of his father both played their part Little children often fantasied that babies were made from food or fæces and their feeling about it was of great importance This linked with the breast experience Penis-envy in the little girl was a factor but was not a simple thing being linked with anxiety about the feminine function and fear of its frustration Equally important was the child's actual experience of the day to-day ordinary relations of his parents Often children who knew quite well what happened in sexual intercourse but had good reason to believe it did harm showed exaggerated infantile theories, especially sadistic ones. The parents feelings in teaching the child were obviously very important: shame solemnity reticence or a deep belief in the goodness of sexuality The child's understanding worked less easily here than anywhere because of conflict and emotion

To the child under 9 or 10 with incipient knowledge and conflicts information was worth giving for the sake of indicating to the child the parent's attitude in the matter Lying and evasion convinced the child of the badness of sexual relations and the badness of wanting to know about them Association with animals was good because the problem was one degree removed and thus less acute Another part of sex instruction was the establishment of privacy without a sense of shame. Questions should be answered when asked the natural period for them was 3 4 or 5 Later the child often did not want to know about these things and there should be no forcing in the matter The emotional content of the questions should be noted If the child went on asking in a compulsive way the question had not been adequately answered. Questions could not be answered once for all because the problem was an emotional and not an intellectual one and would inevitably recur There was little trouble in telling the mother's part the difficulty was to explain the father's part, which was the core of the child's difficulties Answering questions helped even though he completely forgot the answer because it showed that there was no objection to knowledge because it relieved his anxieties about the badness of sexual intercourse because the sharing was an act of love and because it built up his faith in his own future and gave him permission to grow A small child of two had been found standing in front of a mirror saying reflectively Rather like a man Telling about the father's part helped to encourage that attitude of hopefulness Sometimes it was best if the father explained his own part The little girl was encouraged by being told that she had an internal organ corresponding to the visible male organ For small children the parent was the best informant in later years other people might be better The child should not be warned not to speak to other children about these things Children should be allowed a sense of humour No answer solved all the child's problems, and the difficulty was bound up with the child's total relationships Nor was the problem solved by little text books and a few lessons though these were helpful when they rested on continual loving helpfulness on the part of the parents

Mr LYN HARRIS spoke of the necessity of close relationship between home and school so that the attitude of each might be appreciated in the other There should be a direct continuation of experience and no divergence The school approach to all questions of knowledge and behaviour was most important There should be no sense of taboo and no sense of a conventional conclusion, which had to be reached regardless of the right result for a particular child The school must have the right attitude to all bodily functions Coeducation was a great help because the life could be a natural one and an extension of family life *Coeducation must not be* forced, but differences should not be smoothed over but taken naturally The menstrual period should be carefully explained to both sexes in relation to physical exertion Staffing should be regarded as the right admixture of adults in a non adult community, and the adults should be living a full harmonious life Married men and women should be among them An atmosphere in the school of a really happy married life was of the utmost importance *Class instruction* was to be avoided, but in groups under the age of 7 questions might arise which could suitably be discussed for example, a litter of sandy kittens born to a tabby cat might lead to a natural and useful discussion Problems cropped up during nature study and the whole thing could be dealt with quite naturally In the teaching of biology sex teaching should be implicit rather than explicit Problems involving an emotional attitude should be dealt with personally as far as possible The library should be well stocked. The whole thing was to treat the matter just like any other approach to knowledge, so that the subject was not set apart, or emphasised or smoothed over

Dr W R Bion thought the subject was apt to be confused by the psychological conflicts of those entrusted with education and the confusion of instruction in the hygiene, anatomy, and physiology of reproduction with a vague attempt to solve the child's difficulties The two were not easily brought into relation The child had an arduous task, for he had to deal with a changing environment and changing and powerful feelings and sensations which could be aroused by events without or events within Nocturnal emissions added to the difficulty after puberty, and feelings of guilt and anxiety were also present and endowed by the child with objective validity The tone or atmosphere of home or school was most important Objective difficulties paled into insignificance when the child began to try to deal with his internal feelings and conflicts The child was highly selective and might remember one sermon holding up sex as horrible while he forgot a score of experiences to the contrary Dramatisation and objectification further complicated the situation, and others might seize on a child's dramatisation to solve their own conflicts Emotional maladjustment in teachers gravely affected their influence Homosexual masters punished what they regarded as homosexual indications, or mother tied pedagogues urged loyalty to the old school. A child often seemed to try and climb out of his difficulties with one foot in fantasy and one in external reality, it was nearly always the latter which crumbled. Some day educators might come to regard sex difficulties as a matter for education and not for discipline If only hygiene were involved the matter would be simple, but when a need for psychotherapy came in the stage was set for trouble Transference and counter transference provided dangerous elements Most unexceptional statements might be made, but the child would be aware of the emotional attitude behind them To hand a boy a book was to set apart sex problems as the only ones that would be dealt with in that way Any patching up of methods of sex education was likely to be a pernicious excuse for postponing an attack on the fundamental problem, which was the bedevilment of an almost simple matter of psychological development by the psychological parasitism of the adult By the time school age was reached, sex education had become not a liberating agent but a means whereby was added to his other burdens that of coping with an adult transference The problem must be looked upon not simply as one of transition from a bad system to a better but rather as a matter of putting an end to an activity that was positively harmful, and substituting for it one that was beneficent

Miss Barbara Low said that the love between the parents often stimulated jealousy in the child Knowledge should be a liberating thing—but there was another side to it The lesson of Genesis and of Œdipus Rex was that knowledge was a terrible, *dangerous, and alarming thing* To say that knowledge should only be given when asked was putting a great burden on the child, who often dare not ask or dare not face the knowledge he could have

Prof Thouless asked if Dr Bion thought that only psychologically trained persons should give instruction This would not be practicable as the first questions cropped up unexpectedly with parents How far was it true that any normal child would ask questions about sex between 3 and 5 ? Some children did not ask, what then should the parent do ?

Dr J A Hadfield said that children who had been instructed might completely forget and evolve a fantastic theory of their own He did not know what the inhibition was Perhaps a child of 3 did not like to feel it had had that intimate connexion with its mother

Dr Irene Yates thought teachers should have some knowledge of the underlying conflict before children were plunged into dissections after a few weeks at school. This often resulted in complete inhibition of any desire to know any more about biology or sex —Dr D N Hardcastle asked whether the inhibition against knowledge of intimate personal biology was *carried over to general biology*—Dr Yates replied that she had known such a case, a biology course in a medical school had brought up the personal conflicts in great intensity

Mr Harris, asked to define a "proper" attitude, said he meant one of perfect frankness about all bodily *functions, regarding them as part of the* ordinary machinery of life

Dr John Rickman could not understand the danger of knowledge Information could be given in a disturbing way, he knew, but that was not the same thing, and only partial information was disturbing Whole information—that which could be comprehended by the child—was not disturbing

Prof H R Hamley thought the keynote of the discussion was the naturalness of imparting natural information It did not help to tell a boy that wet dreams were natural, but it did help to make him *feel that if he regarded them as natural his tensions* would be relieved He agreed that the child sought knowledge rather than trying to flee from it, and that all knowledge should be treated in the same fearless way When the child felt confidence in the *adult he produced his questions*

The Chairman said that the problem of sex education could not be approached like anything else, it was entirely in a category by itself The average parent could not explain perfectly naturally to the average child. Every child approached the sex problem from a different point of view, which was why class instruction was such a miserable pis aller A large number, for reasons of all sorts and kinds, approached sex knowledge with enormous dread

The mere manner of some parents would dispel the anxiety which was the real problem; the actual information was not the important thing

Dr ISAACS in reply agreed that it was not the information but the emotional attitude that helped the child The ignorance of 9 10 11 was part of the natural emotional development of the child and changed again at 12 13 or 14 The stork had not been invented for nothing It was easier to think of the stork than the phallus Often parents who consciously would like to give information were unconsciously frightened and inhibited questions To initiate the subject the parent could provide a normal stimulus to questioning by such means as visits to babies or contact with animals. On the whole, jealousy was only serious if it succeeded in separating the parents When people felt that knowledge was harmful they did not mean knowledge but the unconscious deep meaning of the knowledge

Dr BION in reply thought the parental part was the most promising approach and that a happy marriage was most important Humility and affection could make up any amount of defects of technique Lying was always detected If ignorant parents would learn with the child they would find a valuable ally in their pupil

Mr HARRIS also in reply thought that even children who had been wrongly treated at home might be led by suitable school environment to realise the simplicity of the great subject of sex

ROYAL SOCIETY OF MEDICINE

SECTION OF EPIDEMIOLOGY

A MEETING of this section was held on Feb 20th with Surgeon Rear Admiral S F DUDLEY the president in the chair In a communication on the

Epidemiology of Weil s Disease

Dr J M ALSTON and Major H C BROWN said that in 1880 Adolf Weil of Heidelberg had described four cases of a form of infective jaundice which were so similar that he considered them to be of the same disease. In each there was a febrile illness with severe jaundice and signs of renal disease and after a severe illness of relatively short duration recovery was rapid Weil's belief that he had established a new entity was finally confirmed in 1915 when Inada of Japan demonstrated the causative organism now named *Leptospira ictero hæmorrhagiæ* The illness was well known at the time in Japan occurring in epidemic or endemic form and characterised by conjunctival congestion muscular pain fever jaundice hæmorrhagic diathesis albuminuria and a fairly high mortality rate this had been the usual form of the disease in all countries The leptospira was a highly flexible filament with very tightly wound and rather shallow spirals at each extremity it was bent over in the form of a hook The disease was widely distributed and it was likely that now easier methods of diagnosis were available it would be found to be almost universal. The highest incidence of the disease so far had been found in Holland France Malay States Sumatra and the Andaman Islands As far as was known at present the disease was absent from Egypt Arabia and Persia and evidence of it in India was scanty Possibly strong sunlight was an important factor for this was lethal to the organism In Great Britain the organism was first isolated in 1932 but very few records of its incidence were published until July 1934 when Fairley showed that the disease occurred comparatively frequently among sewer workers in London Since then 142 British cases had been authenticated There were no data in this country from which to estimate the proportion of jaundiced cases to the total number but in the British army in Flanders, Stokes and Ryle had reported that 60 per cent did not develop jaundice and Schuffner had found the same percentage in an epidemic in Holland Alston and Brown had found agglutinins and protective antibodies in the blood of 9 out of 45 London sewer workers who said they had never had jaundice and similar figures had been recorded among fish workers in Aberdeen It was probable therefore that the disease was much more prevalent than would be expected from present records There was no record of a second attack and agglutinins had been found in the blood twelve years after the first

The spread of Weil's disease was almost entirely due to rats and other rodents which harboured the organism in the kidney and excreted it for long periods without disturbance of their health. The proportion of infected rats was highest among the middle aged and less among the young and old and the only apparent result to the rat was the production of specific antibodies in the blood The leptospira had been found in rats in rural and urban districts in almost all parts of the world In this country the incidence of infection in the brown rat had been reported to be as high as 41 per cent The only mammals other than rodents which had clearly been shown to harbour the infection in overt and latent forms were the dog and, rarely the fox Dogs were therefore possible carriers but Dr Alston thought the risk would not be found to be as great as that from rats It was possible that pigs were sometimes infected as a butcher had been known to develop Weil s disease 8 days after killing a jaundiced pig Infection of one human being by another was very rare but Schuffner believed that a woman had been infected in coitus and Taylor and Goyle that in the Andaman Islands urination on the ground by men with slight infections had helped to spread the disease The organism was very precarious in its viability It was killed by salt water or an acid reaction the fact that infection tended to follow immersion in some only of the canals in Holland was attributed partly to their varying salinity Weil originally thought that infection entered through the alimentary tract but Inada came to suspect that it did so through abrasions in the skin This Dr Alston thought was borne out by the greater incidence among builders than flushers working in sewers Some cases had followed rat bites and others dog and ferret bites apparently by mechanical transmission as the dogs and ferrets had just bitten rats Infection was commoner amongst involuntary than among voluntary bathers in canals presumably because unpremeditated immersion often caused struggling and let water enter the respiratory tract Indisputable evidence of alimentary infection was rare Insects had not been known to transmit the disease The fatality rate had been considered to be high at a time when the mild and subclinical cases were not recognised but in the last 142 cases observed the death rate had been 15 per cent

The frequency of infection among men and women depended so much on exposure through their occupation that the influence of sex was obscured but among fish workers in Aberdeen the percentage infected was the same in both sexes The incubation time according to Schuffner varied from 4 to 19 days the majority of the cases occurring between the seventh and thirteenth The greater number of cases were associated with a few occupations which had rats, dampness, and abrasions in common, fish cleaners, coal miners, canal workers, gravel pit workers, bathers, and people living in rat-infested houses were those most liable to be affected in Great Britain The rat infestation of the fish cleaning shops was due to the fish remnants left lying at the end of the day and leptospira could be found in washings from the tables and floors, this lack of cleanliness was being tackled and prevention should be comparatively easy Dr Alston showed a slide of a fungus which only grows on rat fæces and which served as an indicator of rat infestation in sewers, the rats entered through imperfections in the drains, consequently care was being spent on mending the defects The relation of the *L icterohæmorrhagiæ* to other similar organisms had not been settled, in particular the question whether the non pathogenic organism *L biflexa* could become pathogenic remained open

DISCUSSION

The President mentioned Murgatroid's suggestion that the organism might occasionally establish itself in man and spread from man to man He asked whether it had been proved that any of the pathogenic species could be established as free living organisms

Dr H J Parish wondered why in a country with our large population and with such a large proportion of the rats infected there were not more cases of Weil's disease He also wondered why so many cases had been reported among those who fell into canals where presumably rat excreta were greatly diluted while relatively few occurred among fish workers The possibilities of active immunity were very interesting where other preventive measures were difficult, as for instance, among miners Should laboratory workers protect their eyes with goggles?

Dr J D Rolleston had read in the French literature of a special meningeal type affecting sewer workers and well sinkers He asked whether there were more severe and fatal cases in Japan

Dr T White had seen cases in the war and had considered that infection occurred through the alimentary tract after the rats had walked over the food

Mr Graham asked whether there was any real reason to think that the disease had been recently introduced into this country He had been connected with sewage work for 30 years and had only heard of the disease in the last three or four years He had always boasted before that sewage work was one of the healthiest occupations

Dr A Joe wanted to add brewery worker to Dr Alston's list of occupations

Dr Alison Glover asked how long the pyrexia lasted in the cases without jaundice and whether the black rat was as susceptible as the brown

Dr E W Goodall said it was odd that so many cases occurred among fish workers who were in contact with so much salt water, presumably the rats became infected elsewhere —In answer to his questions Dr Alston said that all but one of the cases among fish workers had occurred in Aberdeen, and that the leptospira only survived about 24 hours in sewer slime, only when the organism was constantly excreted in large quantities was there a risk of infection.

Dr Percy Stocks asked whether rat bite fever were sufficient title for the disease

REPLY

Major Brown, in reply, said that if the disease could not be called Weil's disease it should be called spirochætal jaundice, not infective jaundice which might cause confusion with infective catarrhal jaundice The organism could be carried by the rat but was not normally to be found in its mouth Brown rats were more susceptible than black He had had no experience in this country of cases without jaundice, but from the literature the degree of pyrexia seemed to be slightly less The sera of the meningeal forms was said to give a curious agglutinin reaction missing the one in ten dilution He thought that only chance prevented greater incidence the means of entry as well as the infective material had to be there There was no doubt that it was not a new disease, only four cases had been reported between 1922 and 1934 while 142 had been found in three subsequent years with better methods

MANCHESTER MEDICAL SOCIETY

At a meeting of this society on Feb 3rd a symposium on

Hæmorrhagic Diathesis

was opened by Dr J F Ward He said that although the term usually signifies the group of purpuras it was also applied to other conditions in which repeated hæmorrhages occur from capillaries, either spontaneously or as the result of minimal trauma, and included the hæmorrhagic disease of the new-born and hæmophilia These various conditions differed in respect of hereditary influences, the most frequent site of hæmorrhage, coagulation, and bleeding time, and number of platelets in the circulation Different figures given for coagulation time by different workers were due chiefly to lack of uniformity and a satisfactory method of estimation

Hæmorrhagic disease of the new-born was a deficiency disease, since it was satisfactorily treated by injections of whole blood, but the missing factor was not known In scurvy the hæmorrhagic tendency was clearly due to lack of vitamin C It was doubtful if true hæmophilia ever occurred in the female sex although cases were reported in which it seemed possibly to have occurred Foulis and Crawford's case was difficult to explain unless it were due to marriage of a hæmophilic with a female "carrier" Pseudo hæmophilia had several characters different from true hæmophilia and some of the reported cases were probably examples of inherited purpura No treatment was known that would cure hæmophilia, temporary arrest of hæmorrhage was satisfactorily obtained by blood transfusions, and in external hæmorrhage, by application of Russell's viper venom, which shortened the coagulation time and could be used in high dilution without diminishing its potency Timperley and Naish's treatment with egg white or mucic acid was on trial and has given promising results in their cases

Dr John F Wilkinson discussed the non familial hæmorrhagic states or purpuras After considering their main features, and classifying them into primary (idiopathic) and secondary purpuras, he dealt in detail with the primary purpuras, represented by Werlhof's purpura hæmorrhagica and by the Henoch Schonlein purpuric syndrome The features of purpura hæmorrhagica were, he said the occurrence of hæmorrhages or purpura in or from the skin or mucous membranes with a reduction in platelets, prolonged bleeding time, normal coagulation time, and non retractile blood clot The initial manifestation might be epistaxis hæmaturia hæmatemesis, melæna, or intracranial hæmorrhage Spontaneous remissions were common and there was a tendency to seasonal onset of symptoms Dr Wilkinson discussed the blood changes in this group of purpuras and indicated their importance in association with the clinical findings in making a diagnosis and deciding upon the correct lines of treatment He assessed the various forms of treatment and demonstrated the extreme value of splenectomy in association with blood transfusion with the aid of case records The *indications and contra indications* for splenectomy and the need for choosing the right moment for operation were then considered Dr Wilkinson said that as distinct from these purpuras, the group reported by the Henoch-Schönlein syndrome was less constant. This condition appeared to lie between the urticarias and the purpuras As a rule the blood findings were normal. Henoch's purpura and Schönlein's purpura were not distinct entities but merely varieties of the same syndrome Purpura was not the predominating symptom The condition was usually seen in girls and lasted throughout life with remissions and relapses but the symptoms might change in any person at different times the main ones being pyrexia pains in the joints gastro intestinal symptoms (nausea vomiting colic diarrhœa), blood and mucus in the stools, angio neurotic œdema, and so on Treatment was unsatisfactory Dr Wilkinson concluded with a discussion of the importance of vitamin C in relation to the purpuras

Dr WILLIAM BROCKBANK referred to two cases of purpura hæmorrhagica that had responded well to splenectomy and were well several years later —Dr C P LAPAGE said that he had had good results with potato cream in the treatment of infantile scurvy —*Dr W J S REID again emphasised the difficulties of* estimating accurately the bleeding and coagulation times and described a method he had employed with success; he also referred to a case of familial telangiectasis under his care

LIVERPOOL MEDICAL INSTITUTION

AT a pathological meeting of this institution on Feb 18th with Prof. R E KELLY the president in the chair a paper on the

Œstrin Content of Blood and Urine

was read by Dr O VAUGHAN JONES In the non pregnant woman he said the Graafian follicle was the chief producer of œstrin whereas in pregnancy the placenta was responsible for the vast quantities secreted During pregnancy the œstrin content of the blood rose continuously but the excretion of the hormone in the urine was complicated by the fact that about 90 per cent of it was excreted in the combined form After the third month there was a rise in the amounts of combined form excreted this rise being more conspicuous after the sixth month. The concentration of the free form of œstrin in the urine was low throughout pregnancy but shortly before parturition the amounts of the free form rapidly increased It was to be expected that any upset of the normal course of pregnancy would be shown by changes in the hormone balance in blood and urine and the quantities found should be a guide to the viability of the fœtus The Aschheim Zondek test was a test for the viability of the placenta, not of the fœtus When therefore the fœtus died in utero the Aschheim Zondek test could be and often was positive—this being probably due to the retention of some active chorion epithelium which maintained the production of prolan But it had now been generally agreed that the placenta produced œstrin as well as prolan On this assumption it seemed likely that the death of the fœtus which entailed the interruption of the placental circulation might have an influence upon the hormone level in the blood It had in fact been found that the blood œstrin fell to a low level when the fœtus died —

	No of cases	Blood œstrin.	Subsequent history
Normal pregnancy	25	Positive.	Pregnancy continued
? Missed abortion	1*	Negative.	Macerated fœtuses delivered
? Intra uterine death	29	23 negative. 6 positive.	Macerated fœtus Fœtus alive

Negative = less than one mouse unit in 40 c.cm blood.

Dr Vaughan Jones concluded that the blood-œstrin test was a valuable and reliable means of ascertaining the viability of the fœtus It was essential to discover the amount in the *blood* for the total œstrin in the *urine* of women carrying a dead fœtus did not differ much from that of normal pregnancy

ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW

AT a meeting of this society held in the eye department of the Western Infirmary on Feb 10th with the president Mr G H EDINGTON in the chair a paper on

The Biomicroscopy of the Fundus Oculi

was read by Prof. A J BALLANTYNE. Ophthalmoscopy was he said essentially a branch of microscopy for with the ophthalmoscope they examined structures which were more or less transparent, under varying degrees of magnification, and with various forms of illumination. Since there were many fundus lesions which it was difficult or impossible to explain by histological methods it was all the more necessary that they should employ every refinement of ophthalmoscopy which made the ophthalmoscope a more perfect microscope. This purpose could be served in two ways—namely by focal illumination of the fundus and by the use of filtered or selected light In the anterior segment of the eye focal illumination was employed (1) by direct illumination (2) by lateral or proximal illumination (3) by retro illumination (4) by examination in the zone of specular reflection and (5) by examination in optical section. Within certain limits these methods all had their application in the examination of the fundus Modern interest in the examination of the fundus with selected or filtered light dated from Vogt's employment of an approximately red free light to demonstrate that the yellow spot was not merely a post mortem phenomenon but could be seen in the living eye In many other ways the fundus obtained with the red free light differed from that obtained with the mixed light of the electric bulb and for most purposes the light of the mercury vapour lamp was a good substitute An entirely different picture was obtained by the use of a sodium vapour lamp the bright monochromatic yellow light enhanced the definition of fundus details Clear definition was further assisted by the fact that the vessels stood out darkly against a pale background Surface reflexes were abolished and the retina rendered more transparent Hence deep seated lesions especially in the choroid were more easily seen The advantages both of focal illumination and of examination with selected light could be concluded be obtained without costly apparatus.

NEW INVENTIONS

A SIMPLE EXTENSION APPARATUS FOR FOREARM AND WRIST FRACTURES

In industrial centres such as Sheffield numerous fractures of the forearm and wrist are reduced daily Anybody who has had to assist and to pull steadily and repeatedly for five to ten minutes, will, I believe, appreciate that it is tiring and often painful work and will welcome a simple mechanical method

The apparatus shown in Fig 1 consists of a steel plate in which are drilled numerous holes Through these are passed two long screws with hooks at one end and butterfly nuts at the other The apparatus is fixed to the side of the fracture trolley by a strong thumb screw By reversal of the traction screws the apparatus may be used on either side of the trolley for either arm. The various positions of the holes are to allow reduction with the forearm in mid, supine, and pronated positions, according to the type of fracture The finger and thumb attachments consist of the raffia snares familiar to most people as Japanese toys, and now obtainable from Messrs Down Bros, Ltd. (22A, Cavendish square, London, W) These snares are slipped over the fingers and thumb and as a result of the method of plaiting, tighten and grip firmly when the distal ends are pulled To remove them, the extension is released and the two ends of each snare squeezed together in a longitudinal direction, when they slip off easily The snares are threaded through their ends with ordinary cord and are tied firmly to the traction rods by double knots The thumb is attached to one rod and the three fingers to the other, in fact, the apparatus replaces exactly the assistant's two hands. These snares are of standard size but in some cases are too small to fit over the thumb, Down Bros have therefore made a larger snare out of split bamboo The counter extension used is the webbing band attached to the wall described by Böhler[1] We have had no difficulty or complications using the snares, though in one case they were left on for twenty minutes

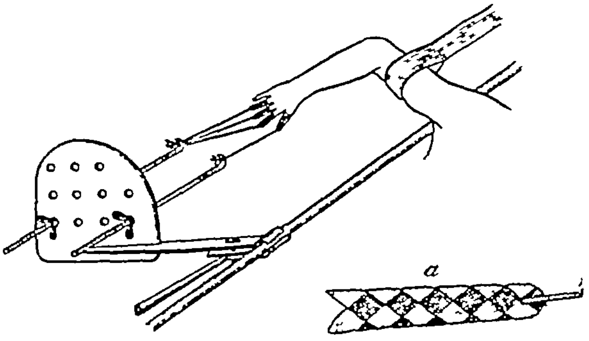

FIG 1 —The extension apparatus showing the method of application (a) a raffia finger snare.

Using this simple device, numerous cases of fore arm and wrist fractures, some with serious deformity, have been satisfactorily and easily reduced. In the fracture clinic now, we use the apparatus for fractures of both the forearm bones with any degree of angulation and shortening and also in fractures of the shaft of the ulna associated with dislocation of the head of the radius Colles's fractures are easily reduced with correct anatomical alignment By

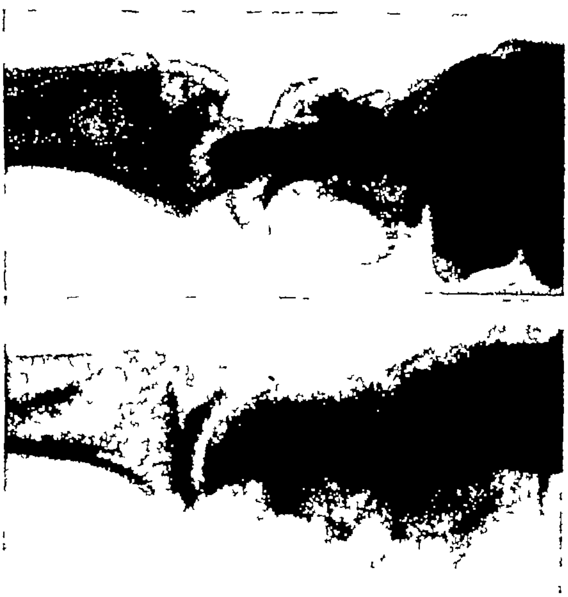

FIG 2 —Reduction of second degree perilunar carpal dislocation Above the separation achieved by extension in the apparatus Below after reduction

passing a wire extension through the thumb pulp, under local anæsthesia, and attaching it by a cord to a traction rod, Bennett's fracture dislocation of the first metacarpal is suitably extended while the plaster is being moulded correctly round the base of the thumb When the plaster has set, the extension wire is tied to a wire splint incorporated in the plaster, as described by Böhler, while the extension cord on the apparatus is cut and removed. Fig 2 shows the degree of extension attained in a case of second degree perilunar carpal dislocation which had occurred three days previously We had no need to resort to any violent manipulative methods If one accepts the statement that this type of injury is a result of a dislocation of the distal carpus around the semilunar bone then the obvious way to reduce it is first to separate the carpal bones by extension Replacement of the carpus is aided by pressing the distal carpal bones—chiefly the os magnum—ventrally and is achieved when the extension is released and the convexity of the os magnum is received into the concavity of the semilunar This is well shown in the radiograms Incidentally, the median nerve is in no danger from pressure if this method of reduction is used

Often while a steady pull—a thing so difficult to maintain manually for any length of time—is acting, one can apply a leg plaster to another case and so save not only energy but also time A further advantage is that the application of the plaster is made easier with the absence of the hands of the assistant, which, instead of being in the way, may be utilised by soaking and preparing the plaster slabs

The apparatus was made by a local blacksmith and has at least its simplicity and cheapness to recommend it

My thanks are due to Prof Ernest Finch, and to Mr F Holdsworth who is in charge of the fracture clinic of the Royal Infirmary, Sheffield, for permission to publish this article

RALPH SHACKMAN, M B Lond, F R C S Eng
Resident Surgical Officer to the Royal Infirmary, Sheffield

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[1] Böhler L (1935) The Treatment of Fractures Translated by E W Hey Groves Bristol p 212

REVIEWS AND NOTICES OF BOOKS

Nostrums and Quackery

And Pseudo Medicine By ARTHUR J CRAMP M.D formerly Director of the Bureau of Investigation (1906–1936) Vol. III Chicago: Press of the American Medical Association. 1936 Pp 232

FOR nearly thirty years Dr Cramp directed a campaign to educate and enlighten the American public about pseudo medicine During the early years of his directorship he brought out two volumes of Nostrums and Quackery which had a wide circulation and influence The first volume, published in 1911 with a second edition in 1913 is now out of print The second volume published in 1921 and indexing the subject matter of both is still obtainable By 1930 sufficient material had been collected for a third volume which only now appears, some time after Dr Cramp's retirement owing to ill health. This volume differs from the others in being mainly a factual record, less space being given to the methods of the nostrum exploiter but there remains in the introduction and in the prefatory notes to the several chapters enough to give even the novice a fair outline of the exploitation of human credulity in the field of medicine

Dr Cramp points out that as far as the U S.A is concerned the pills and panaceas of to day cannot rightly be called *patent* medicines probably not half a dozen of them are really patented. The patent does not meet the vendor's need as it gives him a monopoly for only about seventeen years and publication of the composition would destroy the secrecy and mystery which are the foundation of his success. In confirmation of this Dr Cramp quotes this sentence of a letter from a drug journal to druggists

> It is practically impossible to prove that the therapeutic claims made for a preparation whose composition is not known, are false and fraudulent once however they are given the formulas, they can get as many doctors as is necessary to testify that the preparations made according thereto are not good for the diseases for which they are recommended

and the reply of an honest druggist to the effect

> "That you are afraid of revealing the nature of your preparations to your competitors is absurd There is no preparation on your list that cannot be matched or bettered by one in the National Formulary of the United States Pharmacopœia The sale of your preparations and of others like them depends on advertising and not on therapeutic value

The report makes joyful reading in places There is the story of "Professor Maurice Scholder who had obtained from a learned Dominican friar in Galicia a scientific secret that was the basis of his discovery for growing hair on bald heads He asked for specimens of hair to be sent to him and invariably reported that they were in a seriously undernourished condition. With Dr Cramp's help he reported in this sense not only on the fur of a platinum fox but on some filaments of twine stained black and brown by Dr Cramp himself More poignant is the evidence of a twilight zone in which it has too often proved difficult to distinguish between the quack with a scheme and the visionary with a theory

The book although dealing with conditions in the U S.A contains instruction of universal application and Dr Cramp may well rest content with the fruits of his life work

Malaria in Europe

An Ecological Study By L W HACKETT M.D D P H. Assistant Director International Health Division The Rockefeller Foundation London Humphrey Milford, Oxford University Press 1937 Pp 336 10*s* 6*d*

THE catastrophic results of malaria in Salonika during the war; its appearance as the most terrible epidemic of modern times in Central Russia and even in Archangel and the discovery of an epidemic of 5000 cases in Emden on the North German coast as well as of a few secondary cases in England, have drawn public attention to malaria in Europe From the studies of Swellengrebel in Holland, Martini in Germany and Central Europe Missiroli and Hackett in Italy Balfour Barber Rice and Shannon in Greece Collins in Bulgaria and Hill in Spain, there has emerged a uniformity of opinion on the control of malaria which does not entirely conform with the doctrines previously held by the so-called European school of malariology No better apostle of the new teaching gifted with a vivid style of expression could have been found than Dr Hackett whose style is vivid and whose information is up to date

The puzzling problems which European malaria presents such as anophelism without malaria has thrown new light on the ecology of this disease The epidemiology of malaria is by no means the simple problem that it was formerly thought to be it involves a study not only of man, but of his domestic animals in fact the whole of ecology No less than five biological races of the typical *Anopheles maculipennis* which have distinctive markings and breeding habits and which lay different patterns of eggs have been discovered. These bear the romantic names of *A typicus A messeæ A atroparvus A melanoon* and *A elutus* The knowledge gained of their habits and distribution is certainly applicable to other species of malaria-carrying anophelines in the tropics—as has already been found in the case of *A ludlowi* in the Andamans

A good deal of mystery and even romance is to be found in the story of malaria as already told and it looks as if there were much more to come Dr Hackett has provided a good introduction to this fascinating subject and has shown that Europe is likely to provide a signpost to the prophylaxis of what is popularly regarded as a tropical disease

Tissue Immunity

By REUBEN L KAHN M.S D.Sc. University of Michigan Ann Arbor London: Baillière Tindall and Cox 1936 Pp 707 34*s*

IT might be thought that our available knowledge of tissue immunity is so meagre that its description might be compressed into a few pages and the author who undertakes writing a book of 700 pages on the subject shows some temerity Dr Kahn's book is almost entirely devoted to descriptions of his own experiments Though much of the experimental work seems to have been carefully carried out it is not easy to see in what directions it has added to existing knowledge The central thesis of the book seems to be that reactions of hypersensitivity (allergic reactions) are an evolutionary by product of the mechanism of defence against parasitic invasion This is of course by no means a new conception and it has no very obvious advantages over the alternative view that the reaction to non living chemical agents is the more primitive Dr Kahn's book is not likely to be read by any but experts, and we doubt whether they will be impressed with the value of his experiments and views

Minor Surgery

Third edition By FREDERICK CHRISTOPHER, S B , M.D , F A C S , *Associate Professor of Surgery at the Northwestern University Medical School, Chicago* London W B Saunders Co , Ltd 1936 Pp 1030 42*s*

THE distinction between major and minor surgery is rather an artificial one, and it is obvious from the size of this work that Prof Christopher gives to the term " minor surgery " a wide meaning The book deals not merely with those minor operations which may be performed in a doctor's surgery or a hospital casualty department, but includes everything except the most formidable surgical procedures It should appeal to a large number of medical men the practitioner will find it a valuable guide to the minor operations which are within his scope, and the surgical specialist will be grateful for innumerable practical hints on technical detail. New sections in this edition deal with the healing of wounds, vascular surgery, new methods of treating fractures and sprains, and the pathology and treatment of lymphogranuloma inguinale and glomus tumours Many of the older sections have been considerably amplified The illustrations are skilfully chosen and reproduced The extensive bibliography of current literature is kept well up to date Prof Christopher evidently takes delight in discovering, trying, and making known to others the cunning little tricks which contribute to the success of any operation or contribute to the patient's comfort, and his colleagues have good reason to be grateful to him

Elementary Manual of Physiology

Fifth edition By R BURTON OPITZ, S M , M D , Ph D , Consulting Cardiologist, Lennox Hill Hospital , Consulting Physician, Cumberland Hospital, Brooklyn London W B Saunders Co , Ltd 1936 Pp 442 10*s* 6*d*

Human Physiology

Seventh edition By PERCY G STILES, Assistant Professor of Physiology in Harvard University Same publishers 1936 Pp 446 10*s*

THESE two books cover, between them, the field of elementary physiology Dr Burton Opitz has written a concise, business like account of " straight" physiology, of the type required by medical students , it is well illustrated and balanced, and would serve admirably for a first reading of the subject and as a text-book for nurses The author displays, if anything, too great an anxiety to be accurate as well as brief, and the style suffers in consequence , the book is like tapioca pudding—stodgy, but very safe and very nourishing Prof Stiles's work is, by comparison, effortless, and the reader is carried on smoothly and rapidly , from the literary point of view it is a better book. Its scope is, however, different, being more elementary, suitable for schools and the general reader It is not in any sense a popular treatise, but it presents physiology in relation to everyday life, and contains intelligent discussions of various points of hygiene and of questions like vivisection which certainly add to its value for the reader who may not be studying any other biological or medical subject

Management of Obstetric Difficulties

By PAUL TITUS, M.D , Obstetrician and Gynæcologist to the St Margaret Memorial Hospital, Pittsburg London Henry Kimpton 1937 Pp 879 36*s*

THIS book reflects the mature outlook of an experienced American obstetrician on his specialty His book has a wide scope, for the problems discussed range from those of conception to those of postnatal treatment As a whole the standard of the sections which make up the volume is high, and the importance of preventive medicine is stressed throughout The chapter on Cæsarean section is eminently sane and those on the incidental diseases of pregnancy are particularly good The bibliography is well arranged, with the prevalence of American and German authorities which characterises American work on medicine The sections which appear to us less satisfactory than the rest are those on the management of occipito posterior and breech deliveries The use of Willett's forceps is apparently gaining ground in America, but amniography and aspiration of the uterus in hydramnios are scarcely mentioned The illustrations are profuse and clear

British Journal of Children's Diseases

THE January–March issue contains a paper by Dr Alice Stewart entitled Gastric Acidity in Infants and Young Children Under Normal and Pathological Conditions, with Special Reference to Nutritional Anæmia The literature she finds shows (1) that there is no evidence of congenital achlorhydria, nor is it present in the healthy child , (2) that gastric acidity may be lowered by any parenteral infection, and especially in chronic gastro-intestinal disease , and (3) that the acidity is lower in infants than in older children Dr Stewart's own investigations were carried out on four groups of young children—(*a*) those with iron deficiency anæmia , (*b*) previously anæmic children, now in good health , (*c*) those with other illnesses , and (*d*) healthy children She believes that the deficiency anæmias of infancy are caused by pure iron deficiency, and that the impairment of gastric secretion found in the anæmic cases *is the result, not the cause of the* condition This low acidity, however, decreases still further the amount of available iron, thus aggravating the condition and preventing spontaneous cure —In a paper on Schüller-Christian disease, a triad of defects in bones, exophthalmus and diabetes insipidus, Dr F R B Atkinson has tabulated 103 cases in children up to the age of thirteen years inclusive, on 22 of whom autopsies were held A bibliography is appended —Dr R de Rohan Barondes of San Francisco contributes a paper on Apple Powder and its Application to Intestinal Disorders He maintains that apple powder may be substituted for and indeed is preferable to fresh apples in the treatment of acute and chronic intestinal diseases, since the powdered form enables it to be ready for use at all times Unlike fresh apple it can easily be mixed with milk without causing coagulation or curdling It does not undergo oxidation with the resulting brown colour as happens in apple pulp The powder acts quickly in controlling diarrhœas and dysenteries, and in producing normal stools No ill effects from its use are encountered.

The abstracts from current literature are devoted to tuberculosis

THE LANCET

LONDON SATURDAY MARCH 6 1937

SPECIFIC PROPHYLAXIS OF INFLUENZA

FOUR years ago it was shown that epidemic influenza is caused by a filtrable virus and ever since then the question has been—will this new knowledge lead to the discovery of a method of preventive inoculation? The only reasonable chance of controlling the disease lies in raising the immunity of the population and although the relatively short-lived immunity conferred by one attack does not augur well for any measure of specific prophylaxis the possession of accurate knowledge of the causation has raised fresh hope After all influenza has a definite seasonal incidence and its epidemics run a limited course of two or three months so that prophylactic inoculation conferring even a transient immunity might be far from valueless

Quite early in the investigations at the National Institute of Medical Research it was shown that the immunity conferred on the ferret by an attack of influenza though lasting but a few months could be restored when on the wane by a subcutaneous inoculation of virus[1] This route does not lead to infection in the normal animal and virus administered in this way stimulates afresh the production of neutralising antibody the titre of which falls with the return of susceptibility (It is noteworthy however that a ferret containing an appreciable quantity of neutralising antibody in its blood is susceptible to reinfection) In the past month three important papers on the specific prophylaxis of influenza have been published F M BURNET[2] reports some interesting observations on the infectivity of virus grown on the developing hen s egg for the ferret and mouse Previously he had shown[3] that serial passage of influenza virus on the chorio-allantoic membrane led to its becoming highly adapted to this medium so much so that it regularly invaded and killed the chick embryo in 48 hours He now finds that this egg passage virus when administered nasally to ferrets and mice causes no symptoms of infection in the large majority of animals and yet gives rise to a solid immunity Ferrets inoculated with egg virus do not give rise to contact infection and despite the possibility that the nasal instillation of such a strain of influenza virus in man on a large scale might occasionally produce epidemics BURNET thinks that this method is more likely to be of service in the prevention of influenza than the parenteral injection of living or dead virus That the danger of creating epidemics by the prophylactic use of living virus on a large scale in the field is a real one is shown by the experience of SHOPE[4] with swine-influenza He records epidemics in two herds of pigs which were apparently due to the prophylactic administration of living virus intramuscularly a procedure which had seemed free from risk under laboratory conditions Impressed by this danger C H ANDREWES and WILSON SMITH[5] have concentrated on finding an efficient method of immunisation with killed virus Their experiments on mice show that mouse lung virus inactivated by low concentrations of formalin and given intraperitoneally immunises mice almost as well as living virus similarly administered. With a view to using such a vaccine in man they attempted to free the virus of extraneous mouse protein. Although they accomplished this the purified virus when formolised proved a poor immunising agent even when formolisation preceded purification. However they carried out a preliminary experiment on human volunteers and showed that formolised mouse lung virus injected subcutaneously produced *an appreciable increase in neutralising* antibody which might be maintained for at least 2½ months From America comes a paper by FRANCIS and MAGILL.[6] These workers have made use of virus grown in a chick-embryo Tyrode medium under which conditions it maintains its power to infect ferrets and mice when given by the nasal route and immunises without infecting when inoculated intraperitoneally or subcutaneously They have administered this living culture virus subcutaneously or intradermally to a group of 23 volunteers This procedure was not attended by any unpleasant reactions and no evidence was obtained that living influenza virus introduced by these routes appeared in the nasopharynx Further the persons so treated developed a titre of neutralising antibody which paralleled that resulting from natural infection both as regards degree and duration.

Considerable progress has thus been made towards finding a safe and adequate method of immunising man against the virus of influenza It will be necessary however *to try these methods* in the field before any definite conclusion can be reached about their efficacy

BORSTAL TRAINING

THE last general inquiry into English prisons was conducted by a departmental committee *appointed in 1894* by Mr *ASQUITH* who was then Home Secretary One of the matters referred to this committee was the subject of prison labour and occupation and its deliberations found expression in the Prevention of Crime Act 1908 whereby the Borstal system was inaugurated for young offenders from 16 to 21 the upper age limit having since been extended to 23 years It was the segregation of these young persons that transformed the conception of prison labour to one of vocational training This training has now become the indispensable characteristic of Borstal detention, and serves, also, as a useful index to the happiness and progress of the boys, for, as Mr **Rodger** remarks in the report[1] before us, "a boy who is vocationally efficient tends not only to be vocationally contented, but also to be generally contented, and, conversely, a boy who is vocationally inefficient tends not only to be vocationally discontented, but also to be generally discontented" It was hardly to be expected that vocational inefficiency with its accompanying discontent would disappear at once from Borstal institutions Such inefficiency seems to have been caused less by the imperfect working conditions, which existed in some of them—out-of date equipment, undue pressure on production, and so on—than by the unsuitability of the workers themselves A really able boy frittered away his time doing work which provided him with little scope for his abilities, while good money was wasted in requiring another to attempt work for which he was not fitted Thus the procedure adopted in assigning boys to their various work-parties came under suspicion Nominally, this duty was performed by the house masters, in practice however the boys often made their own choice selecting occupations in which they were interested But inasmuch as interest is not the only determinant of occupational efficiency, failures were inevitable

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[1] Smith W Andrewes C H, and Laidlaw P P (1935) *Brit J exp Path* 16 291

[2] Burnet F M (1937) *Ibid* 18 3

[3] — (1936) *Ibid* 17

[4] Shope R E (1936) *J exp Med* 64 47

[5] Andrewes C H and Smith W (193) *Brit J exp Path* 18 43

[6] Francis T, jr and Magill, T P (1937) *J exp Med* 65 251

At this point the National Institute of Industrial Psychology was asked to survey the situation, and a preliminary experiment was made at Feltham in 1926 "to discover to what extent, if any, the use of psychological tests, by simplifying the problem of allocating the most suitable to the various working parties, would make for contentment and stability in work among the boys and reduce the frequency of requests for a change of task." The prison commissioners reported that none of the lads who were selected for work parties, on the results of the tests, applied for transfer to another party Accordingly a more extensive experiment was arranged, the results of which are here set out[1] Four hundred boys, taken at random at Wormwood Scrubs from boys awaiting removal to Borstal, were examined before they began their training and vocational recommendations made These recommendations were forwarded to the institutions only in alternate cases, in the remainder they were recorded but not disclosed, the boys being allocated to their work-parties by their house masters as before Thus the relative merits of the old and new methods could be assessed with a fair degree of accuracy, half of the 400 boys forming a control group For various reasons, 82 of the boys examined dropped out of the experiment, but fortunately there remained an almost equal number in each group—158 boys in the "recommended" and 160 in the "control" group Of the former, 110 became Grade A workers, of the latter only 73, in other words, 69 5 per cent of the investigator's recommendations and only 45 6 per cent of the house masters' recommendations led to satisfactory results Mr Rodger points out that the difference is statistically significant, it is almost certainly not a chance difference The success of the new procedure was shown more clearly by some of the work-parties than by others, but in every party it was definite

Extracts from some of the tests used are included in an appendix to the report, they were applied to ascertain intelligence, the judgment of shapes and sizes and ability to reproduce them, mechanical ability and manual dexterity Mr Rodger lays stress on the study of temperament Whatever may be the value of carefully interpreted results of carefully constructed and carefully administered tests for general and specific abilities, these do not in themselves form an adequate basis for vocational guidance Ten temperamental characteristics were selected for study—sociability, affection, cheerfulness, assertiveness, anger, energy, carefulness, perseverance, ambition, and stability Such studies of temperament can only be effectively made by a resident trained official with ample opportunity for modifying his recommendations in accordance with the needs of the moment Since Mr Rodger's report was written the prison commissioners have arranged with the National Institute for instruction in the use of vocational tests to be given to Borstal house masters, and several of them have now received such training The result of this investigation should encourage those who believe that the study of temperament is a primary need in the treatment of young offenders It may have even wider value in the prevention of delinquency

MEDICINE STAMP DUTIES

The recommendations, which we print on a later page, of the Select Committee on Medicine Stamp Duties are along the lines foreshadowed in a leading article a few weeks ago[1] and the lines have been extended The legislation which was the subject of the inquiries goes back to the year 1783 when the Chancellor of the Exchequer of that time, regarding "quack medicines" as "very proper objects of taxation," included them in his budget At intervals during the succeeding twenty-nine years the original measure was overhauled, but since 1812 the only alterations which have been made in the law have been due to decisions of the courts and not of the House of Commons Case law has been superimposed upon statutes which may have been within the context of the time when they were enacted, with the result that the provisions of the Stamp Duty Acts to day are, in the words of a learned judge, a mass of confused obsolete verbiage The task of the Committee was a difficult one The case for complete abolition of the duties was presented with great zeal and thoroughness, but the Committee emerged from its ordeal with the conviction that the duties should apply to a wider field and bring in a much larger revenue It is true that the

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[1] A Borstal Experiment in Vocational Guidance By Alec Rodger M A (of the staff of the National Institute of Industrial Psychology) Industrial Health Research Board Rep No 78 H M Stationery Office 1937 Pp 41 9d

[1] *Lancet* 1936 2 1527

Committee has conceded one point as is seen by the recommendation that the duty should be at the rate of twopence instead of threepence in the shilling and should be graduated less steeply. That, however, is cold comfort for a trade which may be called upon to contribute millions of pounds sterling to the Exchequer whereas in the last financial year it contributed less than £800 000. It is estimated by the Committee that the duties now proposed would yield £3 300 000 in a full year; this we still think is a conservative estimate.

It should not be overlooked that the "recommendations" are recommendations and nothing more. It is unlikely that the Committee really intends to tax medicines dispensed on doctors' prescriptions, yet as we read the report that would be one of the effects of the proposals. If the active principle is extracted from the list of proposed dutiable articles it will be seen that it is thus: "substances of any sort held out directly or indirectly for the treatment of any part of the human body or for the protection or maintenance of bodily health should be liable to duty." There can be little doubt that the courts would hold that medicines prescribed or dispensed by medical practitioners were at least "indirectly held out" as being for the treatment of some part of the human body or for the protection of health. Any clause in any Bill presented to Parliament which interprets this recommendation as applying to medicines dispensed on the prescription of registered medical practitioners will need careful scrutiny, for the Committee can hardly have intended to bring such medicines into the same category as lipstick and hair oil. Had the Committee included in the list of exemptions the additional item "all medicines &c. recommended, sold or prescribed by registered members of the medical profession" there would have been no doubt about its intentions.

The recommendations are of a sweeping character. They stop up the holes through which lawful evasion has been possible and sweep in everything which looks like a drug or smells like one. They seek to deprive pharmacists of a privilege which Sir JOHN CAVENDISH, the Chancellor of the Exchequer who first imposed the duties more than a hundred and fifty years ago, intended their ancestors to enjoy. Pharmacists will be on all fours with the sixpenny bazaars should Parliament follow the advice of a Committee which sees no reason why "the modern chemist should have a very valuable preference" in the sale of preparations which claim the "known admitted and approved remedy" exemption which has hitherto enabled them to sell unstamped certain types of preparations liable to duty if sold by ordinary shopkeepers. The Committee appears to think that pharmacists are well enough endowed with advantages and cites the Dangerous Drugs Act as one of them, but while leaving the Pharmaceutical Society free to present its views on the matter of the proposed deprivation of a privilege which has been theirs for a hundred and fifty years it may be doubted whether the pharmacists' obligations under the Dangerous Drugs Act could not be more justly described as a responsibility than an advantage. A note of bitterness against pharmacists seems to have found its way inadvertently into a rapidly prepared and on the whole excellent report. It is suggested that "the presence of a registered pharmacist on premises where there are large sales of ready packed medicines is an illusory safeguard for the purchaser"; the business of pharmacy is however under strict statutory control and constant inspection.

Despite defects almost inevitable in a report which has to be ready by a certain date the recommendations are in the interest of the public and that is the thing that matters. The proposal to tax medicines dispensed on prescriptions of medical practitioners will hardly go any further and it is at least arguable whether soap should be taxed. Although it was not within its terms of reference to consider the ethics of the secret medicine traffic, the Committee says that the "appeal to fear, which is the underlying motive of large numbers of advertisements, is psychologically harmful."

PROTAMINE ZINC INSULIN

IN our correspondence columns this week the four firms that manufacture insulin in this country announce that they are issuing a protamine zinc preparation. It is just over a year since we first drew attention to the success attained by Prof. H. C. HAGEDORN of Copenhagen in his attempt to devise an insulin compound that would be slowly absorbed and thus have a prolonged and constant action. The compound he devised was made by mixing insulin hydrochloride with a protamine derived from the sperm of the rainbow trout, and its merit was that its insolubility was greatest at pH 7·3—i.e., at about the reaction of normal plasma. Our readers will recall that last August IZOD BENNETT and MORTON GILL confirmed the great value of this slow acting insulin for diabetic children. And on Jan. 16th we reported a sectional meeting of the Royal Society of Medicine at which HAGEDORN himself spoke and others testified that compared with ordinary insulin the protamine preparation is capable of keeping patients in better health on a smaller total daily dose.

The addition of small quantities of zinc to protamine insulin delays its absorption yet further. Prof. HAGEDORN said that he prefers "for his own part" to use a zinc preparation only when the ordinary protamine insulin is unsatisfactory, but the amount of zinc added is so small as to be generally considered harmless, and evidently the British manufacturers are persuaded that the advantages of the addition outweigh the disadvantages. In their latest communication[1] RABINOWITCH and his colleagues at Montreal are able to demonstrate that the zinc product is more stable than the ordinary protamine insulin and shows no change after as long as six months. They point out, however, that it is a delicate substance and say that they have to warn their patients against shaking it unduly and against allowing it to be contaminated with the alcohol commonly used for sterilising syringes (Possibly the same caution applies to ordinary protamine insulin, and if so the irregularities often noticed in its effect may perhaps be attributable to contamination with alcohol, or to a change in hydrogen-ion concentration) In clinical use the Canadian workers were very pleased with protamine zinc insulin, for a single daily dose sufficed in almost every case, the risk of reactions was much less than with ordinary insulin, and although protamine zinc insulin rapidly reduced the blood sugar level in hyperglycæmia, there was safety in its use because the fall was no greater with 100 units than with 50 It has been found advisable to bring the patients into hospital to " stabilise " them, and it is worth noting that stability is almost always achieved more quickly with " ladder " diets than by giving the full theoretical basal diet at once It is unnecessary, they find, to make very frequent blood-sugar determinations, and they rightly remark that the simpler the treatment the more likely the patient is to coöperate in it In 132 cases in which zinc protamine insulin was used there were 8 failures—i e , cases in which glycosuria could not be controlled, or the blood sugar could not be normalised in the fasting state, on a single dose daily Of these 8 cases, 3 could not be properly controlled even with frequent injections of ordinary insulin, while 3 others responded satisfactorily to two daily injections of the protamine zinc

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[1] Rabinowitch, I. M., Fowler, A. F., and Corcoran, A. C.: Canad. med. Ass. J. February 1937, p. 111.

In the paper already mentioned IZOD BENNETT and MORTON GILL called attention to the difficulties and dangers attendant on the standardisation of these new products An international unit of insulin is a measure of the activity of a substance of which a standard sample is kept at the National Institute of Medical Research , but the activity of protamine insulin and of protamine zinc insulin differ somewhat from this and from each other, and it is hard to make comparisons Apart from this, the slowness, and occasional irregularity, with which the new products are absorbed often means that it takes a longish time to find the right dosage for a particular patient While it is true that the intensity of hypoglycæmic reactions is usually much diminished when the slower insulins are employed, it is also true that such effects may last longer Again it is to be remembered that owing to their slowness the new products are less rapidly effective in cases of diabetic coma, and most authorities agree that the old insulin should always be preferred for this most dangerous complication At a time when many a patient will be asking his doctor to apply the newest discovery it should be remembered that its use carries certain difficulties and that there are some cases in which the original form of insulin is both easier to use and more effective Prof HAGEDORN in his address quoted and amplified a saying of JOSLIN to the effect that the patient with diabetes is sailing on an uncharted sea and that on this dangerous voyage he is alone save for the company of his physician

ANNOTATIONS

EXPLOSIONS IN OPERATING THEATRES

MOST of the investigations which have been recently undertaken to ascertain the causes of explosion associated with the use of anæsthetics have been directed to discovering the origin of the heat or spark which starts the explosion The position in this respect has been made clear, and was expounded recently by Mr E H Rayner, Sc D , of the National Physical Laboratory, who did much of the necessary work.[1] He showed among other things that static electricity was unlikely to be a danger as long as the atmosphere of the theatre had a relative humidity of at least 65 per cent , which is usually the case in this country An investigation undertaken by Mr J H Coste for the London County Council dealt with the chemical side of the explosion problem. It will be remembered that the late Prof H B Dixon carried out a number of experiments for the Anæsthetics Committee on the ignition points of gases[2] He showed for example at how low a temperature mixtures of ether and oxygen might explode, and he drew special attention to the unrecognised explosibility of mixtures in which air was replaced by nitrous oxide in conjunction with ether or other inflammable gases The work of Mr Coste and his colleague, Dr C A Chaplin, confirms in several directions the previous conclusions of Dixon and his co workers, and defines the limits of explosibility of ethyl chloride vapour and air at roughly between 5 and 15 per cent Their examination of the atmosphere of theatres during open employment of ether, which included determinations of the percentages of ether vapour within a few inches of the patient's mouth and at various heights from the floor, corroborates the usual opinion that the danger of explosion or burning is very slight owing to the rapid descent of ether vapour through air Experiments in a large cylindrical vessel in which ether was spilt on to an absorbent surface at the bottom showed that the diffusion upwards of ether vapour is very slow compared with the horizontal spread, a conclusion which was confirmed by upsetting a bottle of ether on the floor of an operating theatre and examining the air above the spreading liquid Naturally there will be trouble if the heat—cautery, open flame, &c —is applied close to the source of the ether vapour but in ordinary circumstances, if the possible source of ignition is a foot or more above floor level, safety is assured Clinical experience upholds this finding It may be taken that, except in the immediate neighbourhood of the mask, the air in a theatre where ether is being freely used by an open method is not inflammable or explosive—however objectionable it may be otherwise

EFFECT OF POSTURE ON THE ELECTROCARDIOGRAM

CERTAIN persons of asthenic build show circulatory changes of unusual kind when they rise from the lying to the sitting or standing posture " Postural hypotension " is a condition on which much has now been written , but besides the blood pressure the pulse rate may also be affected, and at the same time, as described by Akesson,[1] important changes may appear in the electrocardiogram He investi

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[1] *Lancet* 1936 2 1408

[2] *Ibid* 1927 2 247

[1] Akesson S (1936) *Uppsala LäkForen Förh* 42 263

gated ten patients with arterial orthostatic anæmia and found that as they passed from the lying to the sitting and then to the standing position there was with one or two exceptions, an increase in the pulse of 30 or more beats per minute and in the electrocardiogram a depression of the RS–T segment in leads II and III with a decrease in amplitude or actual inversion of the T wave in these leads In the lying position the curves were normal in all cases. These temporary changes in the tracing are similar to what may be observed as persistent abnormalities in organic myocardial lesions and it is held that in the cases studied an imperfect circulatory adjustment to posture leads to a diminished venous return to the heart, and a myocardial anoxæmia. The oxygen lack causes functional disturbance of the heart muscle, and this is expressed in the electrocardiogram Similar temporary changes in the tracing may be observed during an attack of effort angina, though here it is usual to find an abnormal curve apart from an attack. Since electrocardiographic changes which are dependent entirely on posture may be misinterpreted and accepted as evidence of an organic myocardial lesion Akesson recommends that tracings should be taken with the patient lying down

CAN IMPACTION OF THE THIRD MOLAR BE PREDICTED?

THE third molar and the complications which may arise from its impaction and consequent inability to erupt properly has been subjected to close study during the last few years by Mr Bowdler Henry[1] Not only has he ransacked the available literature but he has taken a large number of radiograms of students and others and has examined them with great care. It is not generally realised how serious may be the consequences of impaction of this tooth out of 622 cases collected by Mr Henry 42 ended fatally But quite apart from the possible danger to life the condition of impaction gives rise to much pain often if indirectly to suppuration while its removal is difficult and the after-effects are usually unpleasant. It is generally agreed that an impacted wisdom tooth is better removed while the surrounding tissues are healthy and that the post-operative sequelæ are less in young subjects Mr Henry in conjunction with Dr C M Morant has now carried out a statistical study of the four series of radiograms of medical and dental students previously collected[2] with a view to ascertaining whether there is any way of predicting ultimate impaction of the lower third molar The method used was to trace the outlines of the three molars and their pulp cavities and certain margins of the mandibles directly from the films These were enlarged by photography and from them a series of measurements were obtained and treated by statistical means The films used were all taken by the same extra-oral method and the main series consisted of 187 films relating to 127 persons ranging from 17 to 42 years Of the measurements taken some were discarded as being too liable to error; finally one index which the authors term the Third Molar Space Index was obtained which promised to give information as to the possibility of impaction This index expresses the maximum breadth of the outline of the third molar as a percentage of the space between the second molar and the border of the ramus It decreases with age and makes a clear distinction between cases of normal eruption and impaction for individuals aged 22 and over It was found that the values of this index ranged from 43 to 90 in individuals with normal eruption of the third molar In cases of coronoid impaction the range was from 90 to 142 while in mesio-oblique impaction the index varied from 81 to 160 Thus the higher the index the greater is the degree of impaction and hence the more reason for intervention. For example, if the index for an individual of 22 years is 120 or greater it should be taken as an indication for removal of the third molars The index would possess considerable value if its measurement in immature persons could be used to predict impaction at a later age At present the material available is insufficient for this purpose though the authors hold out hopes that if a larger amount of data were collected prophecy of this order might become possible a series of radiograms of 100 persons of each sex taken at yearly intervals from 16 to 22 years would be required. Investigations of this kind are of course laborious and expensive and the wastage from persons dropping out of the groups may lead to an annoying and progressive loss of data But this preliminary investigation opens up such interesting possibilities that we hope it may be found possible to extend it in the direction suggested.

CONSERVATIVE TREATMENT OF ACUTE INFECTIONS

SIR David Wilkie's contribution to a series of Clinical Recollections and Reflections appearing in the *Edinburgh Medical Journal* is devoted to the treatment of acute infections[1] There has lately been a fundamental change in outlook on this subject and he attributes it to the surgeon being trained to think more on biological and less on mechanical lines It must now be recognised he says, that in cases of infective punctured wounds of the hand with lymphangitis incision within 48 hours is a grave mistake. Bier's passive congestive treatment which consists in applying a special thin elastic bandage for 22 out of the 24 hours just firmly enough to produce a slight œdema but not duskiness relieves the pain and helps the condition to localise Failure to apply this treatment is tantamount to criminal neglect Hot fomentations and streptococcal antitoxic serum possibly supplemented by Prontosil, are used while the knife lies idly by For a simple boil the treatment recommended is complete immobilisation by strapping until the core is ready to separate Incision is wrong in theory because a boil is not an abscess and it is mischievous in practice What is good for a boil is equally good for a carbuncle; in severe toxic cases staphylococcal antitoxic serum is advised Turning to acute pleural effusions, Sir David points out that repeated aspiration is often necessary before localisation takes place For acute peritonitis return to the old physician's ways of heat and morphia with passive immunity by sera and fluid replacement if there has been vomiting gives the patient a better chance than immediate operation with multiple drainage and attempts at stimulating prematurely the adynamic gut with pituitary extract and the like. Perhaps of the several instances chosen in this paper none is more remarkable than the change of outlook in the management of acute osteomyelitis Dr Broadbent may be right when he says on p 564 of our present issue that this condition is a surgical emergency but if so the operation may certainly be a much more conservative one than has been generally held As Sir David Wilkie says, to day more and more osteomyelitis is treated by moderately free opening of the bone, packing with sterile vaselined gauze, and the enclosure of the whole limb in a plaster case for 3–6 weeks Under this treatment it is usual for pain and pyrexia to subside, and when the wound is dressed at the end of, say, a month, healthy granulation tissue covers its surface

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[1] See *Lancet* 1931 1 416, and 1935 1 313

[2] *Biometrika* 1936 28 3 8

[1] Wilkie D P D *Edinb med J* 1937 44 1

SUBACUTE COMBINED DEGENERATION OF THE SPINAL CORD

It is generally accepted that liver preparations are efficacious in the treatment of the nervous lesions associated with Addisonian pernicious anæmia provided the total red cell count can be kept above 5,000,000 per c mm Hyland and Farquharson,[1] who analyse 74 consecutive cases, conclude that intravenous liver therapy is the method of choice and that a dose at least twice as great as that required to improve the blood picture should be given The best results were obtained when the patient was kept at rest in bed during the early months of treatment In all cases relief from symptoms was striking and often the authors noted definite improvement in objective neurological signs the most gratifying change was in the legs, depending on improvement in power, postural sense, and muscle tone, but there was also considerable recovery of sphincter control and of sensation The most persistent abnormal signs were the altered reflexes, but motor and sensory function commonly improved greatly in the absence of recovery in reflexes An analysis of the sensory changes showed a tendency to a segmental distribution which, Hyland and Farquharson suggest, indicates an origin in the spinal cord rather than in peripheral neuritis They believe that their evidence proves that much clinical improvement can occur even when the tracts of the cord are severely damaged. This improvement they attribute primarily to the subsidence of swelling associated with an active degenerative process, thus allowing undegenerated fibres to resume function and mildly damaged fibres to recover They do not think that peripheral neuritis plays any great part in the neurological manifestations of pernicious anæmia —a point of view at variance with that of many other workers Improvement in sphincter control and reflexes shows, in their opinion, that changes for the better may take place within the cord, while the segmental distribution of sensory lesions they regard also as evidence of central rather than peripheral origin

BACTERIA CHASED INTO BLOOD CULTURES

An interesting aid to the bacteriological diagnosis of typhoid fever is described in the *Presse Médicale* of Feb 3rd by Irdelp, Guchan, and Ugan of Istanbul. They investigated the effect of administration of adrenaline on the blood culture in typhoid fever, and they found that injections given just before the taking of blood may considerably enhance the chance of obtaining a growth of organisms The idea is that adrenaline causes the spleen to contract, and thus, to use the authors' expression, "chasser le microorganisme dans le courant sanguin" The actual procedure is to give an injection of 1 mg of adrenaline hydrochloride and to take the blood for culture 15–20 minutes later This interval was chosen on the basis of X ray examinations of the splenic contractions after the administration of adrenaline The method was tested on 103 blood cultures taken from 49 cases of typhoid fever, and the following Table gives the results of blood cultures taken before and after the administration of adrenaline

Day of illness	Blood culture				Percentage positives	
	Before injec		After injec		Before injec	After injec
	+	−	+	−		
7–14	23	11	26	8	67 6	73·6
15–21	14	28	25	17	33 3	59 5
22–28	0	27	0	27	0	0

It will be seen that it is especially in the third week of the disease, when positive cultures are usually difficult to obtain, that the adrenaline treatment seems advantageous It is stated that the typhoid patients suffered no kind of harm from the use of adrenaline for this purpose

PNEUMATIC TRANSFERENCE OF RADIUM

The use of large radium units has, in the past, been limited by the difficulty of providing adequate protection for staff and patients, and the method of pneumatic transference which allows the radium to be lodged in a safe during all manipulations is an important advance The apparatus is described in a recent article[1] by Mr L G Grimmett, physicist to the Radium Beam Therapy Research at the Radium Institute, London. Pneumatic transference was suggested for the Westminster Hospital unit in 1934, but not then fully worked out For the last two years however Dr Sievert[2] has had a five gramme unit working on this principle at Radiumhemmet, Stockholm The unit at the Radium Institute is mounted on ball bearings in a trunnion and counter balanced Gear wheels are provided for raising and lowering the apparatus, for rotating the trunnion about the vertical shaft, and for rotating the unit about its axis in the trunnion The radium is in special monel metal tubes, each containing 200 mg of radium element in the form of sulphate, and these are packed inside a steel bobbin. This bobbin is blown by air pressure from the safe through a flexible pipe which enters the unit along its axis of rotation in the trunnion It then passes through an internal pipe in the nozzle where it closes an electric contact and this registers its position by lighting a lamp in the operator's room There are three such lamps which show whether the radium is in safe, pipe, or unit The construction of the bobbin is very important It must be light and yet provide a sufficient surface against which the air pressure acts An arrangement of springs in the shape of hardened steel wedges brings the bobbin firmly into position and an ingenious arrangement compresses the air in front of it as it approaches its final position in the unit so that it acts as a resilient cushion The protection aimed at is 10 cm of lead, and this has been achieved except for the region immediately under the radium To increase the protection here as far as possible an eccentric lead screen is fitted which can be rotated so that the thickest portion lies between the patient and the radium For protection use has been made of the tungsten alloy described by

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[1] Hyland H H and Farquharson R F (1936) *Arch Neurol. Psychiat Chicago,* 36 1166

[1] *Brit J Radiol* February 1937
[2] *Acta radiol Stockh* 1937, 18 1

McLennan and Smithells This alloy has a density of from 16 to 16 5 g per c.cm and is roughly one and a half times as effective as lead. Different nozzles can be fitted to allow of treatment at varying distances and areas and a hand loading system is available in case of breakdown The air pressure is supplied by an ordinary vacuum cleaner Together with the lamp on the indicator board there is an electric clock which times the dosage it is started by the contact of the bobbin and runs only when the radium is in position Accurate localisation of the beam is facilitated by a directional calliper devised by Mr T A. Green F R C S The performance of the unit has proved satisfactory and other large units are likely to be installed on this principle in the near future.

NON RHEUMATIC CHOREA

It is generally assumed in the English speaking countries that chorea is almost always evidence of rheumatic activity This opinion is less rigidly held in many continental centres and of late years it has been suggested that chorea is sometimes wholly unrelated to juvenile rheumatism Coburn and Moore now report [1] that in a group of 114 patients attending monthly at a rheumatic clinic for periods of 2–10 years, there were 34 (approximately 30 per cent) who developed no signs of rheumatism apart from repeated chorea In another group of 137 consecutive admissions to a New York hospital for chorea 69 had no history or stigmata of rheumatic disease and though the other 68 had shown rheumatic manifestations in 20 of them attacks occurred when the rheumatism appeared quiescent The choreic child may have no family history of rheumatism and may never show any signs of the disease he may have chorea repeatedly without any preliminary infection of the respiratory tract and without any change in blood sedimentation rate or leucocyte count Other observers have pointed out that the sedimentation rate in uncomplicated chorea is usually normal and this according to Coburn and Moore is strong evidence against the rheumatic origin of chorea. They conclude that the physiological background necessary for the development of chorea may be prepared by a number of abnormal conditions but is especially well prepared by the rheumatism—which accounts for the frequency of chorea in rheumatic subjects On the other hand the factor that initiates the attack of chorea may be entirely independent of rheumatic activity and is probably often psychic It is relevant to note that Dr Lindesay Neustatter [2] working at Guy's Hospital has come to the conclusion that there is probably a common diathesis for nervousness and rheumatism And he thinks that chorea occurs in children who are constitutionally nervous.

STUDIES ON CHRONIC ARTHRITIS

While we have now fairly full knowledge of the anatomical changes in the joints themselves in chronic arthritis we have hardly an inkling as to either their immediate or their remote causation Even our descriptive knowledge of the subject is in a backward state and there is still a wide field of study open to the clinician who has the patience and tenacity to undertake the study of this disabling chronic disease There is much in the saying that to know the natural history of disease is to know more than half medicine It is in particular precise knowledge of the premonitory and incipient signs of chronic arthritis that is needed Until these can be separated from the trivial rheumatic troubles of common life it is difficult to devise any scheme of prevention or early treatment It is at the early stage too that a search for the possible infecting agent should hold most promise A valuable study of spondylitis by Dr Gilbert Scott [1] illustrates the kind of reconnaissance which must take place in the campaign against rheumatism before the sober work of advance and consolidation can proceed He recognises two main types spondylitis osteo arthritica and spondylitis adolescens, the latter being always associated with X ray changes in the sacro iliac joints while in the former the sacro iliac joints are normal. The changes in the sacro iliac joints in spondylitis adolescens may precede the more obvious signs of spondylitis by many years and may be unaccompanied by local pain in the sacro iliac joints A prespondylitic syndrome can however often be recognised consisting in recurrent attacks of rheumatic pain in the limbs thorax abdomen and so forth In such cases an X ray examination of the sacro-iliac joints may be of great value in diagnosing the condition at an early stage *the more so* as according to Dr Scott good therapeutic results may be obtained with X rays if treatment is initiated during the incipient stages

Other articles in this volume are by Dr H Warren Crowe on the pathogen selective culture method and its bearing on chronic rheumatic disease and by Dr Harry Coke on the differential sedimentation test Dr Crowe by no means accepts the Solis Cohen pathogen selective test as a final method of tracing an infection to its focus but he has faith in the value of the test in the study of chronic arthritis The organisms appearing in positive tests were mostly enterococci (including *Str zymogenes*) *hæmolytic streptococci* and staphylococci of a certain type (called by Dr Crowe *Staph flavus*) In a large number of cases of chronic arthritis investigated the highest percentage of pathogen-selective positive sera were met with in the groups commonly regarded as infective in origin—e g rheumatoid arthritis—but in no group was the percentage so low as to suggest the existence of an entirely non infective group The rather complicated test described by Dr Coke is based on the interaction of the positively charged serum proteins in acid medium with negatively charged ortho vanadic acid The final readings are made with a refractometer According to its author it gives more valuable clinical indications than the usual blood-cell sedimentation test and has the added advantage that the patient need not personally attend the laboratory

FREEDOM FOR RESEARCH

The obliquity of antivivisection propaganda is once more illustrated by two Bills before the House of Commons. These are the Vivisection of Dogs (Scotland) Bill and the Cinematograph Films (Animals) Bill a private members Bill sponsored by Sir Robert Gower The danger attending such attempts to hamper medical investigation is that whereas officials of the antivivisection societies spend lavishly their own time and their subscribers money in support of them research workers and organisations can only devote spare moments surplus energy and slender resources to countering what they regard as spiteful and nonsensical propa ganda, and unless vigilance is displayed a damaging Bill may one day slip through Parliament Unfortunately a few of those who allow their names to be used as supporters of the antivivisection movements are medical men The fact that, often long ago, they passed certain examinations does not as a matter of course given them the right to be heard when they deny the importance of the results obtained by other members of the profession from animal experiments, but it weighs to some extent with a section of the public already prejudiced against such experiments The utterances of distinguished investigators whose attention has been especially focused on the importance of experiment on the human subject have, moreover, been twisted and used to obscure the issue, especially as regards the use of dogs for experiments The whole question has been investigated by impartial inquirers over and over again and always with the same result as was reached by the Royal Commission of 1912—namely, that "experiments upon animals, adequately safeguarded by law, faithfully administered, are morally justifiable and should not be prohibited by legislation," and the question of whether the dog should be used in a particular case is one for experts As regards experiments on the cardiovascular system, for example, Sir Thomas Lewis has pointed out that the circulation of dogs more closely resembles the circulation of man than does that of any other domesticated animal, and that information derived from experiment upon unconscious dogs is being constantly used in the practitioner's daily work. The meaning of such common symptoms as palpitation, breathlessness, giddiness, fainting, and innumerable other forms of distress have been elucidated in this way and the technique of any number of therapeutic measures in routine use—e g, blood transfusion, or rectal feeding—is based on knowledge won by animal experimentation

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[1] Coburn A F and Moore L V Amer J med Sci January 193 p 1

[2] Guy's Hosp Rep January 193 p 8.

[1] Charterhouse Rheumatic Clinic Original Papers London Humphrey Milford, Oxford University Press 1937 Pp 3 15s

Even more insidious than the Bill designed to prevent the vivisection of dogs in Scotland is the Cinematograph Films (Animals) Bill, which proposes to prohibit the production or exhibition of (*a*) any film, the producing or making of which involves suffering to animals, or (*b*) any film depicting or purporting to depict combats with or between animals, or the suffering, terror, or rage of animals, and provides that "in any proceedings brought under this Act the court may, until the contrary is proved, infer from the incidents depicted or purporting to be depicted by the film that suffering to animals was involved in the producing or making thereof" Certain objects of the Bill may be excellent but the deliberate omission of any exemption under the Act 39 & 40, Vict cap 77 would mean that the present practice of preparing films showing experiments on animals for teaching purposes or for showing the results of research would have to be discontinued The consequence of such a provision would be an increase of experiments under Certificate C

In antivivisection propaganda misleading statements are constantly being made The central fact that operational experiments are only performed under deep anæsthesia and with the strictest precautions to avoid suffering is not allowed to emerge, the advantages which have accrued from experiments on dogs are concealed and groundless distress is given to many right minded men and women by suggestions of cruelty, sometimes pictorial where none actually exists Doctors could help, probably more than any other body, in creating an informed and intelligent public opinion If they do not know enough of the facts these can be obtained from the literature issued by the Research Defence Society (11, Chandos-street, W) or from a well balanced memorandum upon the Dogs Protection Bill by the Medical Research Council (1927, H M Stationery Office, 2*d*) The closing paragraph of this memorandum supplies a cogent answer to some of the charges which are brought, and raises a useful issue for future legislation Many members of Parliament, and particularly the medical members of both Houses, have in the past helped to protect scientific workers from the consequences of unjust or pernicious legislation, and we have confidence that now and in the future their good offices will be exercised again and again as need arises

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ON March 9th and 11th Dr Crighton Bramwell will deliver the Lumleian lectures to the Royal College of Physicians of London He will speak on the arterial pulse in health and disease The lectures will be held at 5 P.M and members of the medical profession will be admitted on presentation of their card.

THE Royal Society of Medicine will hold a reception on the evening of May 10th to celebrate Coronation Week. Medical visitors to London from the Empire overseas will be welcome to attend this reception, but as accommodation is limited those who wish to take advantage of the invitation are asked to communicate with the secretary of the society at 1, Wimpole street, London, W 1, not later than May 1st

THE fourth Biennial Informal Conference of the British Empire Cancer Campaign will be held on Tuesday and Wednesday, March 16th and 17th, at the Royal Society of Medicine, 1, Wimpole street London, W Admission to the conference will be by card only and applications should be made to Mr Lawrence Abel or Dr R W Scarff, the joint secretaries of the Organising Committee of the Campaign (12, Grosvenor crescent, London, S W 1) There is also to be a dinner on Wednesday, March 17th, at the Langham Hotel Intention to be present should be signified to the joint honorary secretaries, and the dinner will be an informal one in respect of dress

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AN INSTITUTE OF SANITARY SCIENCE —A meeting was held in Dublin on Feb 26th to form an Institute of Sanitary Science Mr Nicholas O'Dwyer, who presided, stated that among the objects of the institute would be training for minor public health work, and the holding of examinations and issuing of certificates for proficiency, the conferring of fellowships, memberships and associate memberships, the maintenance of a museum library, laboratory, and lecture chamber, and coöperation with other bodies interested in the promotion of sanitary science A committee was appointed consisting of members of the medical engineering, and nursing professions

FEDERATION OF THE HEALTH RESORTS OF FRANCE An Easter tour under the management of the Federation is planned, the itinerary in the Riviera comprising Cannes, Grasse, Nice Menton and Monaco, the tour will take place from March 21st to 28th, and for medical men and their families the inclusive charge of Frs 1000 will be made plus a small booking fee The tour is under the direct organisation of the Société Médicale de Climatologie et d'Hygiène du Littoral Méditerranéen, and a reduction of 40 per cent is granted in respect of French railway fares

During the same period a congress on pediatrics under the presidency of Prof Nobecourt, will be held Applications for further information should be made to the Federation of the Health Resorts of France Tavistock House Tavistock square, London, W C 1

PRINCIPLES OF MEDICAL STATISTICS

X—THE COEFFICIENT OF CORRELATION

A PROBLEM with which the statistician is frequently faced is the measurement of the *degree* of relationship between two or more characteristics of a population For instance in a particular area the air temperature is recorded at certain times and the mean air temperature of each week is computed the number of deaths registered as due to bronchitis and pneumonia is put alongside it Suppose the following results are reached :—

Mean temperature of week in F	Number of weeks with given mean temperature.	Mean number of deaths registered as due to bronchitis and pneumonia in these weeks.	Range in weekly deaths.
35–	5	253	180– 84
38–	7	205	147–238
41–	10	130	94–180
44–47	4	87	60–112

There is clearly some relationship between these two measurements As the mean weekly temperature rises there is a decrease in the average weekly number of deaths from bronchitis and pneumonia, which fall from an average of 253 in the 5 coldest weeks to an average of 87 in the 4 warmest weeks On the other hand there is at the same mean temperature a considerable variability in the number of deaths registered in each week as shown in the ranges given in the right-hand column In individual weeks there were sometimes for instance more deaths registered when the temperature was 38°–41° than when it was 35°–38 In measuring the closeness of the relationship between temperature and registered deaths this variability must be taken into account

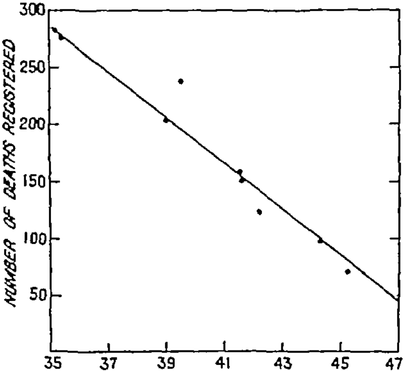

FIG 6.—Number of deaths registered in each week with varying mean temperatures A scatter diagram

The declining number of deaths as the mean temperature rises, and also the variability of this number in weeks of about the same temperature are shown clearly in Fig 6—known as a *scatter diagram* It appears from the distribution of the points (each of which represents the mean temperature of and the deaths registered in one week) that the relationship between the temperature and the deaths could be reasonably described by a straight line such as the line drawn through them on the diagram The points are widely scattered round the line in this instance but their downward trend follows the line and shows no tendency to be curved The means in the table above very nearly fall on the line In such instances a satisfactory measure of the degree of relationship between the two characteristics is the coefficient of correlation the advantage of which is that it gives in a single figure an assessment of the degree of the relationship which is more vaguely shown in the table and diagram (both of which are however perfectly valid and valuable ways of showing associations)

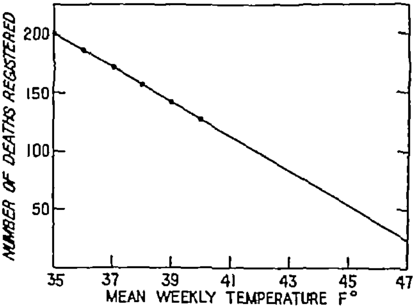

FIG 7.—Number of deaths registered in each week with varying mean temperatures Hypothetical case of complete correlation.

Dependent and Independent Characteristics

There are various ways of considering this coefficient. The following is perhaps the simplest

(i) Let us suppose first that deaths from pneum[illegible] and bronchitis are dependent upon the temperat[illegible] of the week and upon no other factor and also f[illegible] a straight line relationship—i e for each tem[illegible] there can be only one total for the death [illegible] total falls by the same amount as the te[illegible] increases each further degree Then our sca[illegible] gram reduces to a series of points lying [illegible] a straight line For instance in Fig [illegible] total 200 at 35° 185 at 36 170 at [illegible] weekly temperature there is only [illegible] the deaths the number of which [illegible] temperature rises one degree [illegible] temperature we can state pr[illegible] of deaths No error can be ma[illegible] round the line

(ii) Now let us suppose th[illegible] completely independent of the [illegible] fluctuate from week to week for [illegible] When the temperature is low [illegible] no reason why we should observe a [illegible] of deaths than when the tem[illegible] or vice versa If we had a very la[illegible] records we should observe at ea[illegible] kind of total of deaths The [illegible] take the f[illegible] shown in Fig 8 [illegible] in p[illegible] At 35 there were [illegible] weeks in wh[illegible] recorded [illegible] 175 and [illegible] at 36° [illegible] and similarly [illegible] higher temperature The average of the weekly totals of deaths observed is the same at each temperature and is equal to the average of all the weekly observations put together, for the two characteristics being independent there is no tendency *for these averages to move up or down as the* temperature changes If we know the temperature of the week we obviously cannot state the number of deaths in that week with any accuracy We can, however, attempt to do so and we can measure the amount of our error The best estimate of the deaths we can make at any weekly temperature is the average number of deaths taking place in all the weeks put together—for as pointed out we have no reason to suppose that the deaths recorded in a specified week will be more or less numerous than the average, merely because the temperature was high or low Our error in a specified week is, therefore, the difference between the mean number of deaths in all weeks and the number of deaths that actually occurred in that particular week, e g , the mean number of deaths in all the weeks recorded in Fig 8 was 125, in one week with a mean temperature of 36° the number recorded was 50, and our error of estimation for this week is $125-50 = 75$ We can compute this error for each week in turn and find the average size of our error, or, preferably, we can find the average of the squared errors This latter value will, in fact, be the square of the standard deviation of the weekly numbers of deaths (which, as shown previously, is the mean squared deviation of the observations from their average) Our weekly errors between estimation and observation can therefore be measured by σ^2

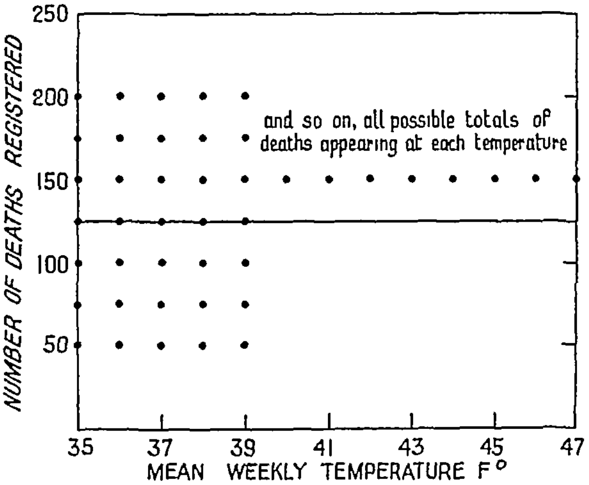

FIG 8 —Number of deaths registered in each week with varying mean temperatures Hypothetical case of complete absence of correlation

(iii) Now let us suppose that neither of the extreme cases is present—i e , neither complete dependence nor complete independence—but that we have something between the two, as in Fig 6, where the deaths certainly decline as the temperature rises but show some variability at each temperature How precisely can we now state the number of deaths when we know the temperature ? Let us draw through the points a line which represents, broadly their trend From that line we can read off the expected number of deaths at each temperature and compare it with the observed number in that week The difference will be the error we make in using this line We can calculate this error for each week and the average of these squared errors we can call S^2

Are we any better off in our estimations of the actual weekly deaths by the use of this line than when we say that in each week we expect to see the average number of deaths that took place in all the weeks ? We can measure our relative success by comparing σ^2 with S^2 *If the two characteristics are entirely independent* of one another (as in Fig 8) the line we draw can have no slope at all and will pass at each temperature through the average number of deaths in all the weeks (there is nothing to make it higher or lower than the average at different temperatures) S^2 and σ^2 will then be the same If the two characteristics are completely *dependent*, as in Fig 7, then there is no scatter round the line at all and S^2 becomes 0 In practice we use as a measure of the degree of association $\sqrt{1-\frac{S^2}{\sigma^2}}$ which is known as r or *the correlation coefficient If no* association at all exists S^3 and σ^2 are, as pointed out, equal and r equals 0 If there is complete dependence S^2 is 0 and r equals 1 For any other degree of association r must lie between 0 and 1, being low as *its value approaches 0 and high as it approaches 1*

The Use and Meaning of the Correlation Coefficient

The actual mode of calculation of the correlation coefficient is fully described in numerous statistical text books, and attention will be confined here to its use and meaning It is calculated in such a way that its value may be either positive or negative, between $+1$ and -1 Either plus or minus 1 *indicates complete dependence of one characteristic* upon the other, the sign showing whether the association is direct or inverse, a positive value shows that the two characteristics rise and fall together—e g , age and height of school children, a negative *value that one falls as the other rises*, as in our example of deaths and temperature In the latter instance the value of the coefficient is, in fact, -0.90 This figure shows that there is in this short series of observations a very high degree of relationship between the temperature and the deaths, but, as it and the graph make obvious, not a complete relationship Other factors are influencing the number of deaths as well as the temperature If we knew the equation to the line we could certainly predict the number of deaths that would take place in a particular week with a given mean temperature with more accuracy than would be possible without that information, *but the diagram shows that in individual weeks we* might still be a long way out in our prediction It is the original variability in the number of deaths at *each* temperature than makes it impossible for the prediction to be accurate for an individual week, though we might be able to predict very closely the *average* number of deaths in a group of weeks of the same temperature The advantage of the coefficient is, as previously pointed out, *that it gives in a single* figure a measure of the amount of relationship For instance, we might calculate two such coefficients between, say, mean weekly temperature and number of deaths from bronchitis and pneumonia *at ages 0–5, and between mean weekly* temperature and number of these deaths at ages 65 and over, and thus determine in which of the two age groups are deaths from these causes more closely associated with temperature level We can also pass beyond the coefficient of correlation and find the equation to the straight line that we have drawn through the points Reading from the diagram the straight line shows that at a weekly temperature of 39 F the estimated number of deaths is about 205 at a weekly temperature of 40° F the deaths become about 185 at a temperature of 41° F they become 165 For each rise of 1° F in the mean weekly temperature the deaths will fall according to this line by some 20 deaths In practice the method of calculating the coefficient of correlation ensures that this line is drawn through the points in such a way as to make the sum of the squares of the differences between the actual observations at given temperatures and the corresponding values predicted from the line for those temperatures have the smallest possible value No other line drawn through the points could make the sum of the squared errors of the estimates have a smaller value so that on this criterion our estimates are the best possible

THE REGRESSION EQUATION

The equation to the line can be found from the following formula :—

$$\text{Deaths}-\text{Mean number of deaths}=\begin{matrix}\text{Correlation}\\ \text{coefficient}\end{matrix}\times\frac{\text{Standard deviation of deaths}}{\text{Standard deviation of temperature}}$$
$$\times\,(\text{Temperature}-\text{Mean of the weekly temperatures})$$

where the two means and standard deviations are those of all the weekly values taken together

Writing in the values we know from the data under study this becomes—

$$\text{Deaths}-167{\cdot}038=-0{\cdot}9022\ \frac{64{\cdot}310}{2{\cdot}867}\ (\text{Temperature}-40{\cdot}908)$$

The fraction on the right hand side of the equation equals 20·24 so that we have—

$$\text{Deaths}=-20{\cdot}24\ (\text{Temperature}-40{\cdot}908)+167{\cdot}038$$

Removing the parentheses and multiplying the terms within by −20·24 this becomes—

$$\text{Deaths}=-20{\cdot}24\ \text{Temperature}+827{\cdot}978+167{\cdot}038$$

or finally

$$\text{Deaths}=-20{\cdot}24\ \text{Temperature}+995{\cdot}02$$

The figure −20·24 shows as we saw previously from the diagram that for each rise of 1 F in the temperature the deaths decline by about 20 (For when the temperature is say 40 F the deaths estimated from the line are 995·02−(20·24) 40 = 185·4 and when the temperature goes up 1 F to 41 F the estimated deaths are 995·02−(20·24) 41 = 165·2)

The figure −20·24 is known as the *regression coefficient* as seen above it shows the change that according to the line takes place in one characteristic for a unit change in the other The equation is known as the *regression equation* As far as we have gone our conclusions from the example taken is that deaths from bronchitis and pneumonia are in a certain area closely associated with the weekly air temperature and that a rise of 1 F in the latter leads on the average to a fall of 20 in the former

Precautions in Use and Interpretation

In using and interpreting the correlation coefficient certain points must be observed.

THE RELATIONSHIP MUST BE REPRESENTABLE BY A STRAIGHT LINE

(1) In calculating this coefficient we are as has been shown presuming that the relationship between the two factors with which we are dealing is one which a straight line adequately describes If that is not approximately true then this measure of association is not an efficient one For instance we may suppose the absence of a vitamin affects some measurable characteristic of the body As administration of the vitamin increases a favourable effect on this body measurement is observed but this favourable effect may continue only up to some optimum point Further administration leads let us suppose to an unfavourable effect We should then have a distinct *curve* of relationship between vitamin administration and the measurable characteristic of the body the latter first rising and then falling The graph of the points would be shaped roughly like an inverted U and no straight line could possibly describe it Efficient methods of measuring that type of relationship have been devised—e g the correlation ratio—and the correlation coefficient should not be used Plotting the observations as in Fig 6 relating to temperature and deaths from bronchitis and pneumonia is a rough but reasonably satisfactory way of determining whether a straight line will adequately describe the observations If the number of observations is large it would be a very heavy test to plot the individual records but one may then plot the *means of columns* in place of the individual observations—e g the mean height of children aged 6–7 years was so many inches of children aged 7–8 years so many inches—and see whether those means lie approximately on a straight line

THE LINE MUST NOT BE UNDULY EXTENDED

(2) If the straight line is drawn and the regression equation found, it is dangerous to extend that line beyond the range of the actual observations upon which it is based. For example in school-children height increases with age in such a way that a straight line describes the relationship reasonably well But to use that line to predict the height of adults would be ridiculous If, for instance at school ages height increases each year by an inch and a half that increase must cease as adult age is reached The regression equation gives a measure of the relationship between certain observations to presume that the same relationship holds beyond the range of those observations would need justification on other grounds

ASSOCIATION IS NOT NECESSARILY CAUSATION

(3) The correlation coefficient is a measure of *association* and in interpreting its meaning one must not confuse association with causation Proof that A and B are associated is not proof that a change in A is directly responsible for a change in B or vice versa There may be some common factor C which is responsible for their associated movements For instance in a series of towns it might be shown that the phthisis death rate and overcrowding were correlated with one another the former being high where the latter was high and vice versa This is not necessarily evidence that phthisis is due to overcrowding Possibly and probably towns with a high degree of overcrowding are also those with a low standard of living and nutrition This third factor may be the one which is responsible for the level of the phthisis rate and overcrowding is only indirectly associated with it It follows that the meaning of correlation coefficients must always be considered with care whether the relationship is a simple direct one or due to the interplay of other common factors In statistics we are invariably trying to disentangle a chain of causation and several factors are likely to be involved Time correlations are particularly difficult to interpret but are particularly frequent in use as evidence of causal relationships—e g the recorded increase in the death rate from cancer is attributed to the increase in the

consumption of tinned foods Clearly such concomitant movement might result from quite unrelated causes and the two characteristics actually have no relationship whatever with one another except in time Merely to presume that the relationship is one of cause and effect is fatally easy, to secure satisfactory proof or disproof, if it be possible at all, is often a task of very great complexity

THE STANDARD ERROR

(4) As with all statistical values the correlation coefficient must be regarded from the point of view of sampling errors In taking a sample of individuals from a universe it was shown that the mean and other statistical characteristics would vary from one sample to another Similarly if we have *two* measures for each individual the correlation between those measures will differ from one sample to another For instance, if the correlation between the age and weight in all school children were 0 85, we should not always observe that value in samples of a few hundred children, the observed values will fluctuate around it We need a measure of that fluctuation, or, in other words, the standard error of the correlation coefficient Similarly if two characteristics are not correlated at all so that the coefficient would, if we could measure all the individuals in the universe, be 0, we shall not necessarily reach a coefficient of exactly 0 in relatively small samples of those individuals The coefficient observed in such a sample may have some positive or negative value In practice we have to answer this question could the value of the coefficient we have reached have arisen quite easily by chance in taking a sample, of the size observed, from a universe in which there is no correlation at all between the two characteristics? For example in a sample of 145 individuals we find the correlation between two characteristics to be +0 32 Is it likely that these two characteristics are not really correlated at all, that if we had taken a very much larger sample of observations the coefficient would be 0 or approximately 0? It can be proved that if the value of the correlation coefficient in the universe is 0, then (*a*) the *mean* value of the coefficients that will be actually observed if we take a series of samples from that universe will be 0, but (*b*) the separate coefficients will be scattered round that mean, with a standard deviation, or standard error, of $1/\sqrt{N-1}$, where N is the number of individuals in each sample In the example above the standard error will, therefore, be $1/\sqrt{144}$ = 0 083 Values which deviate from the expected *mean* value of 0 by more than twice the standard deviation are, we have previously seen, relatively rare Hence if we observe a coefficient that is more than twice its standard error we conclude that it is unlikely that we are sampling a universe in which the two characters are really not correlated at all In the present case the coefficient of 0 32 is nearly four times its standard error, with a sample of 145 individuals we should only very rarely observe a coefficient of this magnitude if the two characters are not correlated at all in the universe We may conclude that there is a "significant" correlation between them—i e, more than is likely to have arisen by chance due to sampling errors If on the other hand the size of the sample had been only 26 the standard error of the coefficient would have been $1/\sqrt{25} = 0\ 2$ As the coefficient is only 1 6 times its standard error we should conclude that a coefficient of this magnitude might have arisen merely by chance in taking a sample of this size and that in fact the two characters may not be correlated at all We should need more evidence before drawing any but very tentative conclusions This test of "significance" should be applied to the correlation coefficient before any attempt is made to interpret it Somewhat more intricate methods are needed to test whether one coefficient differs "significantly" from another—e g, whether deaths from bronchitis and pneumonia are more closely correlated with air temperature at ages 0–5 years than at ages 65 and over (see, for instance, The Methods of Statistics By L H C Tippett London Williams and Norgate Ltd 1931 15s)

Summary

The correlation coefficient is a useful measure of the degree of association between two characteristics but only when their relationship is adequately described by a straight line The equation to this line, the regression equation, allows the value of one characteristic to be estimated when the value of the other characteristic is known The error of this estimation may be very large even when the correlation is very high Evidence of association is not necessarily evidence of causation, and the possible influence of other common factors must be remembered in interpreting correlation coefficients It is possible to bring a series of characteristics into the equation, so that, for instance, we may estimate the weight of a child from a knowledge of his age, height, and chest measurement, but the methods are beyond the limited scope of these articles

A B H

CORRIGENDA —In last week s article the formula in line 17 of the second column of p 527 should read $n=(c-1)(r-1)$ and the numerator of the fourfold table on p 528 should read $(ad-bc)^2\ (a+b+c+d)$

KING'S COLLEGE HOSPITAL NEW WING —On Feb 23rd Viscount Wakefield, vice president of the hospital, opened a wing for private patients which has been presented to the hospital by the Stock Exchange Dramatic and Operatic Society and by other friends on the Stock Exchange The building is 266 feet long and 80 feet wide and runs parallel with the main corridors of the hospital The offices are on the side nearest to the hospital so that accommodation for the patients is separated from sounds connected with its work, but there is direct access to the X ray and other special departments in the main building Above the entrance rises a tower 70 feet high in which are situated the suite of rooms for the resident medical officer and a muniment room for the safe custody of records, it is a memorial to the flight of Mr Giles Guthrie from England to Johannesburg erected by his father, Sir Connop Guthrie On the first floor there are eighteen single rooms for which the charge will be 8 guineas a week. The patient makes his own arrangement for the payment of fees for professional attendance, including the services of the pathologist and radiologist In close proximity to the floor is an operating theatre specially provided for visiting surgeons On the floor above is a complete maternity unit where accommodation is provided at varying charges ranging from 7 to 10 guineas in rooms with one, two, and four beds The services of the resident medical officer will be available for antenatal attention as well as for the confinement, and a comprehensive fee can be arranged to cover both On the floor above is a maternity isolation unit In order to provide the additional staff for the new wing it has been necessary to extend the accommodation for resident medical officers, nurses and maids On these extensions there is a debt outstanding of £15,000 The sum of £8000 would enable the ground floor to be fitted up as a dental department readily accessible from the out patient department, which would release the general ward of the hospital where it is at present housed for occupation by ordinary patients

SPECIAL ARTICLES

HUNTER THE GREAT RESEARCHER *

By Lord Horder M.D K.C V O

On Monday in last week Lord Horder delivered the Hunterian Oration before the Hunterian Society It will appear in full in the *Transactions* of the Society and was a *masterly little disquisition* on the ideals and performances of the great researcher The orator came straight to his subject in the following way :—

Hunter was not *only* a surgeon—it might sound *invidious if I said not a mere surgeon* —he was a physician also and a better physician in many respects than some of his contemporaries who practised in that branch of medicine But more than either of these two things he was first and foremost, a pathologist *in the best and in the only true sense of that* word—a man who sought out the causes and the nature of diseases He was also as we know a great anatomist and physiologist, and he made these two fields of research so wide that they embraced the whole *animal kingdom Hunter's anatomy* and physiology were as we term it comparative as well as human I suppose no man ever spread his net wider than he did in his effort to read a little in Nature s infinite book of secrecy What he was after however and the little (as he would have thought it) that he did was bound up with pathology a branch—shall I not say the root ?—of surgery which, before him, scarcely existed. Even the physician s branch of medicine had precious little real science to support it so that the whole of medicine gained greatly through Hunter's work

TECHNICIAN AND PHILOSOPHER

"Sir D Arcy Power in his Hunterian Oration before the Royal College of Surgeons of England used the phrase the Hunterian tradition by which to express a dual legacy left by Hunter to our profession—namely his technical and pathological trend which he gave to the study of surgery and it was the latter part of his dual legacy with which I will deal disclaiming any intention of estimating Hunter's technical ability as surgeon I am convinced that whatever the degree of his technical skill this was of far less moment as a gift to humanity than the opening up of that vast field of observation and investigation in pathology which laid the foundation for the surgery of the future. It does not appear that he himself introduced much by way of new operations nor laid down new principles by way of surgical technique The one great exception to this statement is his method of curing aneurysm of the popliteal artery This was a much more common disease in his day than it is in ours and before Hunter the current surgical treatment was to tie the dilated vessel above and below the sac and so obliterate it Hunter relying upon the adequacy of the collateral circulation in the leg below the knee introduced the method of tying a single ligature round the artery in the thigh and allowing the aneurysm to shrink This operation said to have saved thousands of limbs and lives spread Hunter's fame more than anything else that he did for it quickly superseded the old operation all over Europe Its introduction was the direct result of work in many fields; in it he united a whole multitude of facts from anatomy physiology clinical experience post mortem examinations and experiments on animals Surgery before Hunter—what was it ? The same old system that the Egyptians knew—making holes to let the evil spirits out Phlebotomy was no more purges and clysters—called by another name to day—have carried on the same notion but for evil spirits read auto intoxication

Lord Horder then pointed out that after Hunter a great change took place in the studies of surgeons who following him in the pursuit of science became the chief anatomists equal as physiologists and pathologists with the physicians who had previously held the scientific field Undue stress he thought seems to have been laid upon whether Hunter proceeded in his researches mainly by deduction or by induction while the conflict of philosophical methods led to confusion of thought and obscurity of language. The known tendency of the Scotch thinker is he said to proceed deductively and of the English thinker to proceed inductively and it seems to have been assumed that the Scotsman working in London would find his native mental equipment embarrassed Experience of which there is quite a considerable amount does not support this view

It is idle to speculate what would have happened if Hunter had gone to a Scotch University and had been educated One possibility is that medicine would have lost John Hunter and been so much the poorer He was of course chiefly inductive in his methods The orator pointed out that Plato Aristotle Hippocrates Galen and Celsus in sequence had followed the deductive method constructing dogmas and theories from the most meagre facts and he suggested that the systematic reform of medical philosophy dated from Bacon as an intelligent attempt to place the investigation of nature on a solid foundation Hunter's excursions into deduction he said, led to no scientific advance

But in induction he did much better He anticipated the recapitulation theory of Haeckel by pointing out that the embryo in each successive stage of its existence resembles the completed form of some lower order than itself He concluded from a large number of studies that abnormalities are an expression of *arrested development* He seemed also to anticipate Darwin in his teaching that structure is the ultimate expression of function and not vice versa. He was fond of teaching that the blood is alive and though here again he seems to be flirting with an old *a priori* vitalistic speculation he seems nearly to have stumbled upon a very modern conception And he got as near to Pasteur and Lister from sheer experimental evidence as to say that air of itself has no power to excite inflammation But though these examples show that Hunter was capable of taking the results of his inquiries into general conclusions he was chary of doing so As for abstractions which *sought to take the place of* demonstrable facts his well known advice to his pupil Jenner sufficiently repeats his own favourite method. Don t think—try; be patient be accurate

JENNER AND HUNTER

Lord Horder gave an interesting account of the close association between Jenner and Hunter based on the long correspondence which took place between them which he said epitomised the spirit the tenacity and industry of Hunter In these letters Jenner was thanked for his experiments with a hedgehog but urged not to ask questions but to try experiments, the problems put before him being so varied as the natural history of a cuckoo, the breeding of toads, the nesting of birds, the temperature of vegetables—"Have you large trees of different kinds that you can make free with? If you have, I will put you upon a set of experiments with regard to the heat of vegetables"—again "Have you any eaves where bats can go at night? If you have, I will put you upon a set of experiments concerning the heat of them at different seasons." "Have you got the bones of a large porpoise? Is ever the salmon spawn seen after she has parted with it?"

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* Abstract of the Hunterian Oration delivered before the Hunterian Society on Feb 22nd

In the course of this correspondence with Jenner it became known to Hunter that Jenner had in some way lost the affections of the "woman of fortune" on whom he had set his hopes. Hunter's condolence, and also his effort at consolation, are both characteristic. . . . "I own I was at a loss," he writes, "to account for your silence, and I was sorry for the cause. I can easily conceive how you must feel, for you have two passions to cope with, that of being disappointed in love, and that of being defeated; but both will wear out, perhaps the first soonest. . . . but 'let her go, never mind her.' I shall employ you with hedgehogs. . . . get a hedgehog in the beginning of winter, and weigh him; put him in your garden . . . then weigh him in the spring and see what he has lost."

THE HUNTERIAN "TRADITION"

Lord Horder continued: "And so, after just 200 years, the tradition comes down to *us*. What are we doing with it? Are we carrying it on? *Can* we carry it on? For that is what matters. Institutions are doing their utmost to carry it on. This Society, as I have remarked; the College of Surgeons, with its great museum—'Hunter's monument,' as the president called it last week—where Wren's telling epitaph would be singularly apt—the enlarged laboratories, the Buckston Browne experimental farm, with its increased equipment, and capable of almost indefinite extension. . . . But what of *us*, the individuals: how is it with *us*? (1) Have we Hunter's power of concentrated industry? Someone has said that genius is as much a matter of perspiration as inspiration, and he must surely believe that if genius is not an infinite capacity for taking pains, at least it takes a genius to exercise this rare quality. I think some of us do possess this power of dogged, persistent effort. When I watch some of my colleagues who are in the van of research at their work I feel ashamed of the laziness of my own mind, the readiness with which it lets go its task, and the ease with which it yields to discursiveness. (2) Have we Hunter's inquiring mind, his lust to know, for the sake of knowing? (3) Have we his intellectual courage? Or do our minds run away when the struggle goes against us? (4) Have we Hunter's spirit of accuracy? Are we, as he was, filled with a divine discontent with any proof except that which carries an inescapable conviction? Remember those cuckoos' stomachs, those hedgehogs—more and more must be examined until the fact we are seeking cannot be avoided. (5) Are we, perchance, saying there is so little left to find out? We know all about hedgehogs—*or do we*?

"We are in a different part of the field, of course, for the pioneers have made a tremendous clearance. But there is probably still as much to be done as ever, though of a different kind. Or do we think that because we are so specialised in our several spheres, and research is therefore much more intensive, our problems are less surmountable than those which Hunter set himself? Tracking down 'elementary bodies' would seem, on the face of it, to be a more stubborn task than discovering the lymphatic system. Heading off a pandemic of influenza, with its almost elemental ravages, and getting its precursors and its 'trailers' and 'settings' accurately taped, seems work for gods rather than mere men. So much easier still to talk about 'epidemic constitutions' and leave it at that. Recognising clearly the factors which go to make a balance, or an 'imbalance,' in a man's hormones, and getting control over this delicate adjustment—surely Hunter never had a task which was the like of this? Solving the riddle of the endocardial infection. Understanding the mechanism of high and of low arterial pressures. Diagnosing cancer before as yet it yields what we call 'physical signs' or suggests its presence by recognisable deviations from the average in the radiologist's shadow pictures. Determining sex. Preventing a whole heap of diseases which, once established, we cannot cure."

THE STRESS OF TO-DAY

The orator concluded by pointing out that these problems were for us to-day. "We have a corpus of knowledge to draw upon, completely hidden from Hunter, but are deflected by the domination of the age. Life has us by the throat. We are caught between instinct and reason; we have let go the former but we have not yet got a sure hold upon the latter; we are no longer savage nor are we yet sapient. To 'the intruding rabble of men, and books, and institutions' that broke in upon Emerson's peace we now add a host of new distractions and disturbances. What are we going to do about it? Are we also going to become a mob or are we going to maintain our intellectual freedom? To carry on the Hunterian tradition we must take to heart the Sage of Concord's warning: 'Let us not rove, let us sit at home with the cause. . . . at times the whole world seems to be in a conspiracy to importune you with emphatic trifles. Friend, client, child, sickness, fear, want, charity, all knock at once at thy closet door, and say—"come out unto us." But keep thy state; come not into their confusion.' A few men and women are, I think, bent upon doing so. Unlike 'those who went upon the Holy Quest' they are not 'lost in the quagmire' nor do they follow 'wandering fires.' If only the politicians can keep the ring for them. God help them to do so! I suppose politicians do *know* how important these things are, how vital to all of us and to the future? When Pitt was approached with the object of getting the government of his day to purchase Hunter's unique collection of specimens he is reported to have said: 'What! Buy preparations? Why I have not money enough to purchase gunpowder!' History repeats itself. At first thought it would seem foolish to grudge the exchange of scientific inquiry for bombing planes, seeing that others have decided that if it is to be guns or butter then it is to be guns. But at second thought comes wisdom, and we remember that even dictators are transient, if not trivial, whereas these other things are eternal. Surely it is better to know the behaviour of a cuckoo's stomach than to organise a nation for war? Dr. Johnson once said that 'the man who is growing great and happy by electrifying a bottle wonders to see the world engaged in the prattle about peace and war.' The thought is the same (and I have the satisfaction of knowing that on this occasion I had expressed mine before I came across Dr. Johnson's). I feel quite sure that if John

Hunter were amongst us to-day he would risk the same charge of simplicity or of impertinence as did Johnson's physicist. Nor would he be ashamed if the gas-bomb found him so occupied.

Cannot you *see* this little man (Hunter stood 5 ft 5 in. in his boots) with his shock of red hair, his exuberant vitality, his restless curiosity, making his attack upon the new world of facts, probing, measuring, comparing, his tools so rudimentary, his methods all his own, grappling Nature, laying her under tribute, wrestling with her like Jacob with the angel, and saying, as Jacob said, "I will *not* let thee go except thou bless me."

"Let us imagine he *is* here, as indeed he is, living on amongst us in the tradition that he left behind him. Let us be worthy of him and of it.

MEDICINE AND THE LAW

The Counting of Swabs

AN inquest at St Albans last month raised two points of some importance. A married woman had entered the Hill End Hospital as a patient in 1922. Her husband, who had not seen her for ten years, told the coroner that he consented to a surgical operation being performed upon her about 14 months ago; he was afterwards informed that the operation had been successful. On Feb. 2nd, 1937, the patient died. Post-mortem examination showed that death was primarily due to myocardial degeneration; there was also localised peritonitis, probably set up by the presence of a small gauze swab lightly attached to the intestines and accompanied by a small pocket of pus. So far as was known the deceased had undergone only one operation. The surgeon who, under arrangement with the Herts County Council, had operated on the patient described the routine work of using and checking swabs; it was, he said, the duty of the nursing staff to check them and the operating surgeon was obliged to rely on the nurses in this respect. The assistant matron of the hospital, in charge of the operating theatre on the occasion concerned, explained how she had checked the swabs in bundles of ten, handed clean ones as required and counted the dirty swabs thrown away into a bucket. She could not now say how many were then used. She was satisfied that every swab used at the operation had been accounted for. A hospital sister who assisted the previous witness confirmed the checking and counting: her evidence indicated that, if any mistake had occurred, both she herself and the assistant matron must have made the same mistake.

The first point of medico-legal interest, therefore, was the fact that the inquest provided one more occasion for speculation whether the responsibility for checking the swabs lies with the nursing staff or whether the surgeon, who puts them in, has a legal duty to see that they are all taken out. In other words, do the surgeon and nurses act as a team or does the surgeon remain solely liable? A swab inadvertently left in the patient's body is a potential danger. Is the mere fact of its presence in the body conclusive evidence of negligence, or is it merely prima facie evidence? In Crotch *v.* Miles (*Lancet* 1930, i, 717) Lord Hewart told the jury that it might well be that, in the actual course of the operation, while the surgeon was cutting and opening and attending to his surgical task, it was neither to be expected nor desired that he should be busying his mind with the counting of every swab and forceps or with the question whether one was missing. Lord Hewart however offered the jury the suggestion that they might possibly think it part of the surgeon's duty to concern himself with that inquiry at the close of the operation. "It may well be that any delay would be prejudicial if it occurred before the body of the patient was stitched up, but you may think that afterwards, before the surgeon departs, it is reasonable that he should personally satisfy himself that the number is correct and that there is nothing missing." The jury, therefore, in Lord Hewart's view, had to decide upon the particular facts of the case whether there had been negligence on the part of the surgeon or not. The legal position still awaits amplification.

The second point in the St Albans case arose out of the statutory duty to report the cause of death. Every death in a lunacy institution within his jurisdiction, said the coroner, had to be notified to him within the prescribed time, so that he might consider whether the facts required inquiry. No mention was made in the report from the hospital to the coroner of the discovery of the swab. The pathologist who made the post-mortem examination had been in doubt whether the prescribed form of report contained any particular place where the information could have been appropriately entered. The details entered on the form were settled in discussion between the pathologist and the medical superintendent. There was clearly no intention to conceal facts from the coroner, since the medical superintendent personally reported the full circumstances to him; the pathologist, when filling in the form, was aware that this oral report was being made. Had it been desired to keep the facts from the coroner the coroner would be unaware of them to-day. The coroner explained to the jury the necessity of complete information being given to him. He probably had in mind that Form 33 appended to the Mental Treatment Rules asks for the immediate cause of death, the morbid conditions (if any) giving rise to the immediate cause and the other morbid conditions (if important) contributing to death but not related to the immediate cause. Form 10 also, the post-mortem record, provides a space for "any special notes." The jury returned a verdict of "death by misadventure"; nothing was said of any negligence on the part of the surgeon. The coroner indeed had gone so far as to say that an operating surgeon could hardly be asked to count and check swabs but should be allowed to leave these details to the persons specially trained and trusted for this purpose.

Allegation of Negligence Withdrawn

An allegation of professional negligence was handsomely abandoned by plaintiff's counsel on Feb. 22nd before Mr Justice Lawrence, although, as this step was not taken till the case was called on for trial, the defendants must first have been put to considerable trouble and expense in preparing their defence. The action was brought against the Governors of the Royal Masonic Hospital at Ravenscourt Park and also against the house-surgeon, in spite of the fact that he had neither advised nor performed the operation which gave rise to the case. The plaintiff (on behalf of herself and her infant son) claimed damages in respect of the death of her husband. When the patient was admitted to hospital it was considered that the only chance of saving his life lay in an immediate operation. A specialist performed it, but the patient's condition was such that he died two days later. The plaintiff complained that the operation had been negligently performed and that since the patient had not consented to it, there had been an actionable assault Plaintiff's counsel frankly admitted that the claim would, at the best, have been a difficult one but, by the time the hospital's records and documents had been examined, "it became apparent that not only was there no hope of succeeding but no ground whatever for proceeding with the claim" All allegations were withdrawn, the hospital took judgment with costs but does not propose to enforce them against the widow Every successful resistance to claims based on suggestions of professional negligence does service to the profession as a whole

Mushroom Poisoning

Not long ago a plaintiff succeeded in obtaining damages for food poisoning in a case where the connexion between the menu and the illness was not conspicuously clear In Harris *v* J Lyons and Co, decided last week, the plaintiff had eaten a meal including mushrooms one evening at one of the defendant company's restaurants He felt very ill in the middle of the night, he suffered from a painful affection of the skin, and his medical attendant, having heard what the patient had eaten, diagnosed mushroom poisoning He formed that opinion, in the words of Mr Justice Swift, with perfect honesty and professional propriety Two doctors called for the defence, however, disagreed with this diagnosis Both were experienced in mushroom poisoning and its effect on the skin, in their view Mr Harris was suffering from erythema *multiforme* With this conflict of evidence, said the judge, it was impossible for the court to hold that without any doubt Mr Harris was suffering from mushroom poisoning There was a doubt, and Mr Harris, not having discharged the onus of removing the doubt, could not succeed The defendants, not content with relying upon the failure of the plaintiff's case, offered a mass of evidence to rebut the suggestion of negligence They could not allow a customer to say that a dinner in one of their restaurants meant an illness They gave the life-history of their mushrooms from the first chapter of the sterilised spawn in carefully superintended beds at Worthing to the last chapter when the chef at Olympia prepared the dish for table The judge announced that no negligence could be attributed to the defendants They had been most careful. He was sorry for the pain Mr Harris had suffered, but the court could not dip its hand into the company's pocket to award compensation to Mr Harris unless satisfied that the company was responsible for Mr Harris's condition Mr Harris had failed to prove that post hoc was also propter hoc

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PARIS

(FROM OUR OWN CORRESPONDENT)

EARLY DIAGNOSIS OF UNDULANT FEVER

THE undulant fever research centre at Montpellier has issued a report by R M Taylor, M Lisbonne, and L-F Vidal on the symptomatology of the disease as shown in 333 cases in which the diagnosis was confirmed by serological tests or blood culture In 135 cases *Brucella melitensis* was grown from the blood, and in 8 cases *Br abortus bovis* The nine most prominent clinical manifestations were asthenia, fever, excessive perspiration, attacks of shivering, anorexia, constipation, insomnia, pain in the joints and muscles, and irritability Asthenia was noted in every case, fever in 99 per cent, and irritability in 41 per cent When these nine manifestations were classified according to the stage of the disease at which they first appeared, asthenia was found to be the earliest and irritability the latest A classification of 322 cases according to the diagnoses first made demonstrated a high proportion of mistakes In 90 cases the doctors first consulted had been prudent enough to leave the diagnosis open. In the remaining 232 cases the diagnosis was usually made with more promptness than accuracy, for among the early diagnoses only 89 correctly attributed the illness to undulant fever In as many as 71 cases (31 per cent) the initial diagnosis was influenza, next came infection of the respiratory tract (19 cases), and typhoid or paratyphoid fever (16) Other mistaken diagnoses included articular rheumatism, sciatica, meningitis, orchitis, and neurasthenia—which illustrated the polymorphism of the disease, not to mention the diagnostic versatility of the practitioners concerned There were only four cases in which malaria had been incorrectly diagnosed, but as Dr Taylor and his colleagues point out, this figure would assuredly have been much higher had malaria been endemic in the neighbourhood

LICENSED PROSTITUTION

M Henri Sellier, Minister of Public Health, is already encountering opposition to his proposal to add France to the abolitionist countries A speech recently delivered at Lyons by Dr C Fouqué was a glowing, almost apostolic, defence of the licensed brothel and of its occupants Lyons, by the way, has an interesting system of medical supervision of prostitution devised and practised by two doctors in this town, and the alleged efficacy of this system was one of the arguments advanced by Dr Fouqué in support of the old order of things A perusal of his speech, reported at considerable length in the *Siècle Médical* for Feb 15th, must induce many a reader to marvel. It appears that Dr Fouqué is a convinced believer in Lombroso's conception of certain women fated from birth to become prostitutes While all men are supposed to be polygamous by instinct if not in act, and most women are supposed to be monogamous by circumstance if not by instinct, there is this Lombroso discovered type whose functions are apparently as valuable as they are innate Dr Fouqué spoke of this born prostitute as of one who must always be treated with kindness and solicitude, "almost with respect, for she accomplishes, unconsciously perhaps, a social role of the greatest utility" If M Sellier's opponents are to take their cue from such a speech as this, with its emotional bias and its avoidance of such disagreeable facts as are to be gleaned from the abolitionist countries, he may count himself happy, for the French are essentially logical.

CHLORINATION OF THE DRINKING WATER

The vital statistics of Lyons make instructive reading in view of the verdunisation of the city's drinking water The general mortality in 1936 was 10 35 per 1000 inhabitants, whereas the average for the five years preceding the introduction of chlorination was 13 Between the ages of 0 and 20 there has been a decline in the general death rate by 47 per cent within the same two periods As for the typhoid mortality, it has been reduced from 3 to 1 per 100,000 inhabitants The behaviour of the death rates in Paris before and after the introduction of chlorination is remarkably similar to that of Lyons, and a campaign is now afoot in favour of compulsory chlorination of the main supplies of drinking water throughout the country

MEDICINE STAMP DUTIES

REPORT OF SELECT COMMITTEE

LAST November fifteen members of the House of Commons were appointed to consider the duties of excise chargeable under the Medicines Stamp Act, 1802 the Stamp Act, 1804 and the Medicines Stamp Act, 1812 and any enactment amending those Acts and to report thereon and make such recommendations for the alteration of those duties or otherwise as they thought fit with a view to re forming the law relating thereto This select committee freely used its powers to send for persons papers, and records, and its report was issued last week (H.M. Stationery Office. 3d)

CONCLUSIONS

The committee came unanimously to the following conclusions —

(1) That the existing Stamp Acts, passed over 100 years ago are out of date largely obsolete and quite inappropriate to modern requirements.

(2) That owing to out-of-date exemptions and to a number of judgments in the courts, wholesale avoidance of duty has been practised which has led during the last nine years, to a remarkable decrease in the yield of the duty (nearly 50 per cent)

(3) That the law should be simplified thus removing those obscurities which at present give rise to numerous anomalies and add greatly to the difficulties of administration.

(4) That in spite of some evidence to the contrary the trade in medicinal articles is in their opinion one which is suitable for taxation

(5) That the rate of duty should be lowered particularly in the lower ranges, and more evenly graduated

(6) That it is undesirable that the same product should be sold by different vendors stamped and unstamped

(7) That a far larger range of preparations should be made liable to duty

RECOMMENDATIONS

Arising out of these conclusions the committee recommends :—

(1) *Repeal* —That the Acts of 1802 1804 1812 Section 2 of the Finance Act 1927 and all other existing legislation on the subject of Medicine Stamp Duties be repealed

(2) *Dutiable articles* —That, subject to the *exemptions* mentioned below the articles in the following list should be liable to a duty based on the retail selling price :—

Preparations or substances of any sort, including medicines, medicaments medicated articles drugs herbs fumigants inhalants disinfectants antiseptics soaps, tooth pastes tooth powders mouth washes medicated wines natural or artificial mineral waters or compositions for making such waters confectionery toilet preparations and cosmetics to be used or applied externally internally or otherwise as medicines or medicaments which are recommended held out or advertised in any way whatsoever either directly or indirectly (whether by public display wireless telephony or other mechanical reproduction of the human voice or by label notice circular or other written recommendation or otherwise) for the prevention cure or relief of any human ailment defect disorder condition or habit or for the treatment of any part of the human body or for the protection or maintenance of bodily health.

(3) *Duty scale* —That the present scale of duties should be revised as follows —

Retail price excluding duty		Rate of duty
Exceeding	Not exceeding	
—	¾d	⅛d
¾d	1½d	¼d
1½d	3d.	½d.
3d	6d.	1d.
6d		*1d for the first 6d and 1d for every 6d or part of 6d over 6d

The committee was much inclined to recommend a direct ad valorem sales tax of 16⅔ per cent —i e 2d in the 1s —but was persuaded that this would be more difficult to administer and would cause more disturbance to existing prices and other arrangements of manufacturers.

(4) *Excise licence.*—That the licence of 5s per annum be continued as heretofore

(5) *Exemptions* —That exemptions be granted to—

(*a*) all medicines &c. (as set out above) recommended and sold solely and exclusively to registered members of the medical or dental professions;

(*b*) all preparations, &c supplied to registered medical or dental practitioners for use in the discharge of their professional duties also all preparations, &c supplied to registered pharmacists or registered medical or dental practitioners for use in dispensing as a component part of medicines prescribed by such practitioners

(*c*) all medicines, &c exported for use or consumption abroad and

(*d*) all British spa waters consumed only at the place of origin.

FURTHER SUGGESTIONS

The committee went on to urge consideration of the propriety of taxing foods and certain appliances (such as deaf aids) beverages (alcoholic and otherwise) and other preparations widely advertised as possessing properties beneficial for health If it is found difficult to distinguish between cosmetics which claim to be remedial and those which do not the best course might be to tax all cosmetics

Should control of the trade in medicines and appliances be deemed desirable for the protection of the public the committee believes that the best method of achieving this would be a system of examination and registration of all advertised medicines and appliances

CONTROL

The committee endeavoured to limit its inquiry as far as possible to the fiscal aspect of the question Strong opinions were, however expressed by certain witnesses in the course of the inquiry that some form of control of the medicine trade was desirable to safeguard the public from fraudulent exploitation Authoritative statements were made to the effect that people (largely the poorer and less well-educated) spend more money than they can afford on remedies of little or no efficacy with an accompanying indirect danger to health as a result of their not seeking medical or surgical treatment in time "Though we have reason to believe the report runs that matters are not as bad as they were we are strongly of opinion that the appeal to fear which is the underlying motive of large numbers of advertisements not only of medicines in the strict sense but of such articles as those referred to at the beginning of paragraph 6 is psychologically harmful. The reference here is to products such as tonic foods beverages appliances, meat extracts cereals bread and even mustard which though not strictly medicines are widely advertised in effect for the relief cure or prevention of some human ailment.

PARLIAMENTARY ELECTION FOR THE COMBINED ENGLISH UNIVERSITIES

THERE will shortly be an election for the representation in Parliament for the Universities of Durham, Manchester, Liverpool, Leeds, Sheffield, Birmingham, Bristol, and Reading Nomination day is to day, March 5th, and polling will commence on Monday, March 15th. Sir Henry Brackenbury, a vice president of the British Medical Association and of the Association of Education Committees, is standing as an independent, Sir Francis Lindley, recently ambassador extraordinary to Japan, as the national conservative and constitutional candidate, Mr T E Harvey, formerly M.P for West Leeds, as an independent progressive, and Mr F O Darvall, director of research and discussion for the English Speaking Union, as an independent candidate to the extent that he will not accept any party whip but at the same time will give general support to the National Government In his election address, Sir Henry Brackenbury, the only medical candidate, says —

"The main hope for the future of this country is the cultivation of childhood and the full development of all its immense potentialities The chief care of the nation should be to help and encourage motherhood and to make it as safe as possible, and to secure for children, even from the prenatal stage up to full adolescence, such a physical and mental environment as will permit of the development of a complete and many sided personality I appreciate the efforts which the present Government have made and are still making to these ends, but bolder, more continuous, and more coördinated efforts are required A fuller and integrated scheme for a national maternity service is immediately necessary Nursery and open-air schools should be further encouraged, and many of the older school buildings should be radically altered or replaced The provision of playing fields, gymnasia, and swimming baths should be facilitated Restrictive regulations on secondary school buildings, made when economy was urgently required, should be rescinded, in the planning of new schools, both elementary and secondary, due regard should be paid to the provision of suitable and sufficient dining hall and kitchen accommodation A larger proportion of specially qualified, trained, skilled teachers is required in most schools, not least in those for infants and junior scholars and for retarded children The coming considerable fall in the number of children of school age should not be used for an immediate reduction in teaching staffs, but rather as an opportunity for securing smaller classes and a higher proportion of teachers to children It should be made possible for teachers to take their due share in public life"

On the urgent question of nutrition, while pointing out that there are no exact criteria by which degrees of nutrition can be measured, Sir Henry points out that recent statistics show that in the elementary schools there are definite proofs of under nourishment, while the inter relationship between physical training and nutrition and mental training is so close that they cannot properly be separated He says

"I am in full sympathy with the proposals of the present Government in this regard I was a member of the Executive Committee of the Central Council of Recreative Physical Training and of the Special Committees of the British Medical Association on Nutrition and on Physical Education which have had so profound an effect in guiding public opinion and formulating policy on these questions I hope that experience gained in these investigations and surveys might prove useful in the designing of practical measures for development The gaps still remaining in the continuity of care for children and young persons should be filled and the permitted hours of labour of those who have entered industry shortened The dependants of persons insured under the National Health Insurance Acts should be included in that health system, and some needed extensions and improvements of that service should be effected Indeed, the time is ripe for the initiation of a comprehensive general medical service for the nation based upon the prevention of disease, the promotion of positive health, and the provision of skilled medical care and attention, both general and specialist, for those who are ill Such a scheme should be established after full consultation with the medical profession The need for the care of mental health, especially for those distressing conditions of fear, anxiety, obsession, and the like, both in children and adults, which cause about one third of the incapacitating illness of the country, is quite as great as that for attention to physique and to bodily ills

"Biological, psychological, and medical research into many aspects of maternity, mentality, and educational methods as well as research into various branches of technology and agriculture, should be more fully aided by the State, preferably under the auspices of the universities of the country"

Pointing out that a well educated and properly used medical profession is the best safeguard to the public health, Sir Henry stresses the great importance to the public of medical education, a subject with which he has been prominently concerned in many recent inquiries "I am convinced," he says, "that most of the changes in the newly prescribed curriculum will tend to the improvement of what was already good, changes in medical science, social needs, and pedagogic methods are so rapid and significant that continued efforts are required to keep medical education fully adapted to the needs of the community"

Sir Henry concludes his address by affirming his reliance on the League of Nations, whose success in many spheres, he points out, has been far greater than is commonly supposed, certain major failures he holds to point to the greater effectiveness which might be arrived at by a modification of methods

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED FEB 20TH, 1937

Notifications —The following cases of infectious disease were notified during the week Small pox, 0, scarlet fever, 1587, diphtheria, 1156, enteric fever, 30, pneumonia (primary or influenzal), 1881, puerperal fever, 46, puerperal pyrexia, 136, cerebro spinal fever, 45, acute poliomyelitis, 5, encephalitis lethargica, 10, continued fever, 1 (Leatherhead), dysentery, 59, ophthalmia neonatorum, 93 No case of cholera, plague, or typhus fever was notified during the week.

Notifications of acute pneumonia in England and Wales were only 7 per cent above expectation In London itself there were 55 per cent below

The number of cases in the Infectious Hospitals of the London County Council on Feb 26th was 3301 which included Scarlet fever 841 diphtheria 1002, measles 30 whooping cough 571 puerperal fever 18 mothers (plus 10 babies), encephalitis lethargica 283 poliomyelitis 3 At St Margaret s Hospital there were 19 babies (plus 9 mothers) with ophthalmia neonatorum

Deaths —In 122 great towns, including London, there was no death from small pox or enteric fever, 9 (0) from measles, 4 (1) from scarlet fever, 43 (9) from whooping cough, 35 (2) from diphtheria, 39 (12) from diarrhœa and enteritis under two years, and 423 (33) from influenza The figures in parentheses are those for London itself

Of the 339 deaths from influenza in the great towns of England and Wales outside Greater London the largest totals were reported from Liverpool 29 Manchester 25 Birmingham 23 Stoke-on Trent 19 Hull 13 Newcastle upon Tyne and Walsall each 11 Leeds and Middlesbrough each 10 With the sole exception of Leeds all these figures are lower than in the previous week. Corresponding figures for Scottish and Irish towns were Edinburgh 14 Glasgow 12 Dublin 20 Belfast 6—In each case except Belfast a drop on the previous week

Birmingham reported 2 deaths from measles Fatal cases of whooping-cough were scattered over 20 great towns Liverpool reported 7 Manchester 4 Fatal diphtheria was reported from 27 towns 3 from Wolverhampton not more than 2 from any other

The number of stillbirths notified during the week was 268 (corresponding to a rate of 40 per 1000 total births), including 41 in London.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month his name can be seen later in the half yearly index

FROM A RUSTICATING PATHOLOGIST

II

WHY do we not save domestic trouble by having meat at one meal and pudding at another or meat on Mondays, Wednesdays, and Fridays pudding on Tuesdays Thursdays and Saturdays, and both on Sundays? Why do we have both approximately twice a day? Women talk a good deal about labour saving in the home though they do not really seem to do much about it. I suspect indeed that what they really want is to get rid of one piece of labour so that they can add or substitute another; electrical carpet-sweepers for example do not actually diminish the amount of work put into cleaning they enable more to be done with the same amount of work and the standard of cleanliness to be raised moreover they have the fascination of a gadget. Anyway any suggestions made by men (who naturally incline towards bestial habits of life) in the way of simplifying the feeding business do not seem to be very welcome Why not use the same plate for successive courses, wiping it up if you like in between with a piece of bread? Well it just isn t done what may be mixed with advantage in vivo would upset the constitution if mixed in vitro though why bacon and marmalade should be more revolutionary than mutton and red currant jelly is hard to see and I did once see a hurried gentleman in an American hotel who had fried eggs waffle cakes and maple syrup for his breakfast and mixed them all up together on one plate, and got outside them in about a minute And when seeing that our Ruby was out and that washing up would presently ensue I proposed that we should clean up our plates a bit and then use the backs I soon felt that the mills of God were grinding very thoroughly This washing too is not what it was for that eminently practical and labour saving device the plate rack is no longer comme il faut each plate has to be wiped dry and polished which bacteriologically is a dirty thing to do compared with putting them up on edge to dry themselves Small wonder that some people take to newspapers

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Now I have the highest respect for the essential soundness of the domestic habits and customs which are imposed on us by our women out of their instinct and accumulated unconscious experience I do not suppose that anyone could prescribe a more perfect diet than what is supplied for her family by a sensible woman who is not restricted by money The tale of modern dietetics is as good a yarn as anyone has ever had to tell and one of its most interesting features is not that it has told us what to eat but that it has explained why we eat what we do To work out such an empirical scheme is a wonderful testimony to woman s capacity to see the connexion between long distance causes and effects which is evidently from the history of the progress of human intelligence not at all an easy thing to do Remembering too what a plight we should have been in if we had all been compulsorily fed by the physiologists say about 1910 I should be very chary about challenging any of our accepted dietetic habits—accepted that is by ordinary people who have enough money not by freaks and reformers In some instances accepted practice seems to be certainly wrong in its development—e g in the idea that what is known as offal to the butchers is no longer genteel whereas we have every reason to suppose that a moderate supply of livers kidneys hearts and with more hesitation haggis is very good for us as a great placard in Manchester used to say The King eats tripe why not you?' And seeing that most of our modern knowledge comes from the rat it may be taken as germane that animals are very fond of offal when Martha (a puppy) kills a rat while Mary appropriately looks on Shadrach and Meshach (the kittens Abednego died untimely) wolf the guts and viscera but they leave the muscle alone unless they are hungry though they will scrunch up the head apparently to get the brain which always used to be a human delicacy at pig killing and may be of some unrealised importance I do not remember ever hearing anything about the nutritive qualities of brain But on the whole practice is without doubt sound and I have no desire to dispute the propriety of having meat and pudding at the same sitting what I should like *to know is the reason for it Is it* something to do with the stimulation of the stomach by meat to secrete gastric juice or is it that the liver likes to have the amino acids and carbohydrates presented to it about the same time or is it merely an illustration of the truth that man does not live by bread alone but needs the right æsthetic circumstances to get the best out of his meals? After all, meals are perhaps meant as much for conversation as for nourishment

* * *

Another custom which causes an enormous amount of work all over the world is the habit of cooking food and there does not seem to be any very complete explanation of why it is done yet the proportion of uncooked food we eat is very small No animal cooks its food and man may have taken to it because he made a fire to warm himself and found that roasting a piece of flesh made it more tasty But the habit is far more widespread than are the climatic conditions which need artificial heat (having just read the directions for writing for THE LANCET I see that I ought to have written cooking is done in hot as well as cold places but let it pass), and man is evidently strongly of opinion that cooked food is better for him than raw or at least that he likes it better indeed anyone who regularly ate raw mutton chops in England nowadays would be looked upon as a disgusting fellow little better than a cannibal Yet man can live on uncooked meat and vegetables raw minced flesh was the mainstay of some therapeutic diet or other and there are quite a number of people who eat raw carrots and even raw cabbages either to keep away cancer or on general hygienic grounds But the habit is certainly to cook one of the great virtues of the seal is that he carries with him the oily fat with which his flesh may be cooked in the Arctic whereas fish do not The general explanation of cooking would probably be that it makes food more digestible This seems true for some vegetables at any rate it is said that one of the troubles of continuous travel at high altitudes as in Tibet is the difficulty of properly cooking rice and the porters get the stomach ache and grow gloomy. The modern canned pea too, being well autoclaved, seems to be easier in the stomach than the freshly boiled little bullets which are often provided. But these matters of the stomach are largely questions of habits and training, and the custom of cooking was evolved by a young and vigorous population whose chief concern was probably to get enough of something. Experiment too is said to show that raw meat is actually digested a good deal more easily than roast or boiled. The whole business seems to need explanation; meanwhile, I hope to go on having well cooked meals. It is possibly a question of de-naturing the proteins; it may be easier (using Huxley's illustration) for man to turn cooked crab into human proteid than for a crab to convert raw sailor. Or perhaps man realised at an early stage what we are only just learning about milk—that it is better to more or less sterilise it. The chances of infected or contaminated food were of course much greater than they are now; the old dame who kept my first school dated from the time when water was pretty dangerous stuff, and when we were heated in innocent play and likely to drink a lot she insisted that it must be first boiled; unfortunately it was warm when it reached us and beastly so, if we could slink off, we drank from a cattle trough in the field.

* * *

Most of the modern work on nutrition has concerned infants and children, perhaps because they are more amenable than grown-ups and less opinionated and, like rats, are prepared to eat what fate and elder people heap upon their plates. The good results are everywhere apparent, and there is no more striking difference between England of to-day and thirty years ago than the appearance of the children, in town and country alike and perhaps particularly in the country, much of which was, and unfortunately some still is, thoroughly slummy. It does not of course all come from better feeding; boots, clothes, and ideals have all changed, and there has been a general increase in the standard of life. But food seems to have a good deal to do with it. What some people have wondered at is whether these larger heavier, rosier children will in the end make healthier men and women and better citizens; to be big is obviously uneconomical unless bigness is correlated with other, more human virtues, and plainly anything comparable to the monstrous rats and guinea pigs which are produced experimentally would be out of place in our society. No clear answer to the question will be available for a long while, and perhaps when the time comes to take stock of what has happened the variables will be confused beyond analysis. No one can define how infantile mortality has been halved more precisely than by saying people began to take notice of it and be ashamed; all sorts of people then did all sorts of things and fatalities soon fell, but it is impossible to measure the credit due to the bacteriologist in the laboratory against that we must give to the kindly woman in the infant welfare centre. We may surmise that there will be the same kind of difficulty when we come to measure food against healthiness. But looking at the young things of to-day it is difficult not to believe that their good food will do much to keep them well, at least in some respects. Bad feeding certainly encourages tuberculosis, though it has no clear relation to the influenza virus or the pneumococcus, and to call any vitamin "anti-infective" seems going rather far. What will happen with the degenerative diseases of middle life is quite unknown and we have no idea whether being 2 in. taller and 7 lb. heavier on leaving school will fend off arterio-sclerosis 30 or 40 years later. However it would be really heart-breaking if we had to think that our nice looking young people are not really healthier than the generation before them.

* * *

This concentration of interest on children has also diverted attention from the far more important group of active experienced men and women between 30 and 50. How are they to feed themselves to get the best out of their brains and training? To say that children are the most important section of the community is sentimental twaddle of the worst kind. They need looking after because they cannot look after themselves, and they are convenient to look after because they can be coerced, but for the well-being of the world the health and liveliness of a man of 40 who has established himself as a good workman at his job is far more important than the state of many children. What are known as "great men" seem to have only one thing in common which is insatiable industry. And what more desirable aim could dietetics have than to enable the middle-aged man to work effectively for 10 hours a day instead of 7, and to avoid fading away towards the end of the afternoon? I do not recall anyone discussing this problem except Dr. Corry Mann, who tried drinking milk with his lunch. Could not the experiment be extended in, for example, Whitehall with some of the surplus milk of which apparently there will still be plenty when the children have had all they ought to? It really looks as if we need something to balance the innumerable organisations for encouraging and improving children—a Society for the Promotion of the Middle Aged or something of that kind.

* * *

Apart from the curious sexual cult of slimming, we hear little in this belly-minded age of the virtues of asceticism, and we are seldom reminded that gluttony was one of the seven deadly sins. Yet there must be something in it. "Up to 20 eat all you can get, from 20 to 40 eat as much as you can, over 40 as little as you can do with," and the mortification of the flesh has never lacked advocates among those who think more of intellectual and spiritual things than of being hearty and jolly, though one may suspect that "more people are killed by overeating than overdrinking" must have come from the bishop who said he would rather see England free than sober. How far it has been universal for saints to subdue the flesh to the spirit I do not know, but a great many of them have done it, in modern as well as ancient times. Unfortunately we know little about the personal habits of distinguished men and their biographies are painfully reticent about such things; some of them have been plump but many have certainly been thin, and not a few of them small as well. What Mr. Gladstone ate for breakfast must surely be as important as what he said in 1881, and in all the charming intimacy of Darwin's "Life and Letters" there is no hint of what he actually did for his queasy stomach. Voluntary starvation for a short time is widely recognised by lay people as a good thing to do when they do not feel very well, and various systems of treatment, orthodox and quackish, have been based on starvation more or less concealed with tasty waters. A friend of mine who starved for a fortnight said that he reached a state of mental clarity (subjective) and exaltation which he would never have thought possible and it was only the sight of his face in a looking glass which sent him in search of food As the best short story in the world tells us Saul fasted before he went to see the witch of Endor and temporary abstinence has been recognised on an enormous scale in a variety of religious cults as a likely precedent to getting authentic tidings of invisible things the consensus of opinion in its favour is overwhelming It might be a good preparation for a difficult consultation or an important experiment Of the bodily and mental effects of habitual austerity we know little Mass experience in times of trouble or in certain social classes is always confused with other factors than diet typhus would have no relation to famine if soap and hot water were to be had for nothing And ascetic individuals who are healthy and productive may well represent the extreme of the normal variation in food requirement. But there does seem a little danger at the present time that the possible virtues of eating less are being overlooked it is established beyond doubt that being too fat is one of the most dangerous diseases anyone can have

CORRESPONDENCE

MANIPULATIVE SURGERY

To the Editor of THE LANCET

SIR,—As one who was present at the demonstration by Sir Herbert Barker at St. Thomas's Hospital on July 22nd 1936 I was interested but not surprised, to learn of the gratifying proportion of successes that resulted and which are recorded and analysed by Mr Bristow in the last issue of THE LANCET After the heated controversies of the past, it was a courteous gesture on the part of Sir Herbert Barker to give this interesting demonstration and I yield to nobody in my appreciation of the pertinacity with which this able exponent of manipulative methods has fought for the recognition of this valuable and highly specialised method of treatment The demonstration and its results have received wide publicity in the lay press and may I without appearing ungenerous utter a plea for a more logical and unbiased attitude towards this important problem and one that does justice to those within the ranks of the medical profession who quite independently and without any knowledge of Sir Herbert Barker's methods although doubtless inspired to a certain extent by his advocacy have striven to place this method of treatment upon a scientific basis?

The impression that the average layman is clearly intended to form from a perusal of many of the reports in the lay press is that the medical profession for a long period has known nothing and cared less about manipulative treatment and that Sir Herbert Barker having generously demonstrated his methods, we should now pursue an active policy and give our patients the benefits of these—i e Sir Herbert's—methods There is a grave fallacy in this familiar argument for are not the methods of medical pioneers in this sphere also worthy of consideration and study?

There must have been few present at the demonstration who did not learn something of real value although some of the methods demonstrated have been practised and taught by orthopædic surgeons for years The results confirm the view held by most of us that no permanent cure of a badly torn semilunar cartilage with recurrent displacement can be brought about by manipulation The marked improvement brought about by manipulation in the cases of recurrent dislocation of the shoulder of long standing is a remarkable fact quite new to most of us and merits careful consideration Speaking personally I saw little to cause me to make any marked alterations in my own technique I have little doubt that Sir Herbert Barker himself deprecates the verdict of some of the sections of the lay press that the work of the medical workers in this field is of such insignificant value that it can be ignored

The pioneer work of the late Sir Robert Jones and of others in this field was also of inestimable value in convincing the medical profession of the value of manipulative methods and there are others still in our midst who have not had the opportunity of seeing the technique of Sir Herbert Barker but who have devoted much time and energy to the advancement of this branch of surgery and who like myself have lectured and given demonstrations to doctors in all parts of the British Isles Mr Bristow in his concluding remarks states

> From Barker's demonstration, certain excellent details in his technique will probably be followed He taught the value of repeated manipulation the value of traction the personal supervision afterwards and above all the splendid optimism which is essentially a part of treatment in helping those with long standing disabilities whose confidence has been rudely shaken by failures of the earlier efforts at cure.

May I in order to do justice to my colleagues and myself parallel each of these main points by quotations from the first edition of my book on Manipulative Surgery published in 1925

> (1) *The value of repeated manipulation*.— In difficult cases, it is a sound principle to stay one's hand and be content with achieving the desired result by a carefully planned series of manipulations rather than to run the risk of exciting severe reaction and shock (p 30)
>
> (2) The *value of traction* is duly emphasised in [illegible] sections of the book devoted to manipulation of individual joints. For instance on p 129 in [illegible] the wrist the advice is given that "During these movements traction should as far as possible be [illegible]"
>
> (3) *Personal supervision after manipulation*.—"[illegible] sation and personal attention to the smaller [illegible] essential (p 30)
>
> (4) *The importance of restoring the patient's* [illegible] — The importance of firm but kindly [illegible] and [illegible] inspiring confidence and keen co-operation [illegible] can hardly be over-estimated (p [illegible]) "The medical man must never forget that [illegible] have previously consulted divers others [illegible] and unqualified and that their [illegible] upon him He must prove [illegible] and by a judicious combination of [illegible] and determination snatch victory often [illegible]" (p 32)

This evidence is merely [illegible] to show that the elements of Sir Herbert Barker's [illegible] which Mr Bristow very [illegible] worthy of special note [illegible] independently [illegible] of his colleagues Similar [illegible] obtained from the teaching of [illegible] surgeons

I am [illegible]

[illegible] FISHER

Montague-street [illegible]

To the Editor of THE LANCET

SIR,—I [illegible] at ness to Sir [illegible] this be [illegible] able [illegible] he treated by manipulation at St Thomas's Hospital on July 22nd, 1936 Case 1 was said to be a case of recurrent dislocation of the shoulder of 15 years' duration The shoulder had "dislocated" hundreds of times, sometimes daily It had never had to be reduced by a doctor

I described the pathology of recurrent dislocation of the shoulder, I believe for the first time, in 1923 (*Brit med J* 2, 1132) The condition is due to a wide traumatic separation of the fibrocartilaginous glenoid ligament from the anterior margin of the glenoid cavity The defect is permanent, because there is no tendency for the torn ligament to reattach itself to the bone The head of the humerus is therefore free to leave the joint anteriorly on the slightest provocation The anatomical condition is quite constant and can be seen and verified by any surgeon who cares to expose the anterior margin of the glenoid cavity in a genuine case of recurrent dislocation of the shoulder It is then obvious that the only rational treatment is to reattach the glenoid ligament (or the capsule) to the bone from which it has been torn This operation never fails

With regard to Case 1 (above), I have yet to meet the man who could reduce a dislocation of his own shoulder joint, and it would be interesting to know precisely what happened on the hundreds of occasions when this shoulder was alleged to have been dislocated When Barker examined the man he said, "It is obvious that there is no large defect in the capsule in this case"—a statement which I would suggest is a contradiction of his diagnosis, since dislocation of the head of the humerus cannot occur without such a defect In conversation I once asked Barker how he accounted for his success in view of what we know about the pathology of recurrent dislocation He replied frankly that he did not know, but he could only suppose that his manipulation caused such a stirring up of the tissues that the dislocation was prevented If this is the true explanation, it must surely be unique in Barker's experience (as in ours), for in no other region of the body is manipulation designed to produce *limitation* of movement, indeed it is difficult to see how it could do so Moreover, nothing that Barker did to this man (Case 1) in our presence could possibly have produced such a violent reaction as is suggested by this explanation

Recurrent dislocation of the shoulder joint is not very common I think it is quite clear that the condition which Barker calls "recurrent dislocation of the shoulder" is not the same as that which we call by that name It is more than doubtful whether the man here referred to (Case 1) ever dislocated his shoulder That he felt something "slip" in his shoulder joint I do not doubt, and that this "slipping" was due to adhesions or contracture in or about the posterior part of the capsule of the joint is more than likely We are familiar with such cases, and incidentally we have treated them by manipulation, but we do not call them cases of recurrent dislocation of the shoulder At the same time we must admit that recurrent dislocation of the shoulder has been apparently cured by the most irrational surgical procedures, and, if it can be cured by manipulation, we are only too willing to learn But it is fair to demand that the diagnosis should be unequivocal, and it is not unreasonable to ask for an intelligible explanation.

I am, Sir, yours faithfully,
A S BLUNDELL BANKART

London W March 1st

PROTAMINE INSULIN (WITH ZINC)—SUSPENSION

To the Editor of THE LANCET

SIR,—The retarding action of protamine, with the addition of zinc, on insulin has been the subject of investigation for some time past Protamine Insulin (with Zinc)—Suspension is now made available by the four firms associated with the manufacture of insulin in this country, Messrs Allen & Hanburys Ltd, Boots Pure Drug Co Ltd, The British Drug Houses Ltd and Burroughs Wellcome & Co

The preparation is a suspension of insulin with added protamine and zinc, of such a character that it is readily and evenly diffused on shaking prior to administration As it is more slowly absorbed than unmodified insulin it should be of particular use in cases where unmodified insulin does not provide adequate control or where several administrations daily are necessary While extensive clinical trial has determined the issue of a satisfactory preparation, there is still much to be learned about its general use, therefore care will be necessary if reactions are to be avoided due to unfamiliarity with its use or deviations from a properly balanced dietary

Protamine Insulin (with Zinc)—Suspension is issued, at present, in one potency (40 units per c cm) Two sizes are available 5 c cm containing 200 units and 10 c cm. containing 400 units The packings will be distinct in colour from existing packings of unmodified insulin

We are, Sir, yours faithfully,
ALLEN & HANBURYS LTD,
BOOTS PURE DRUG CO LTD,
THE BRITISH DRUG HOUSES LTD,
BURROUGHS WELLCOME & CO

London March 1st

TREATMENT OF FRACTURE OF THE NECK OF THE FEMUR

To the Editor of THE LANCET

SIR,—Mr Bailey seems to have missed the point of my previous letter I contend that radiological control is *the* essential part of the technique of extra articular nailing Instruments to place the guide may be classified as luxuries

The many advantages of this new surgical technique that can successfully replace a large exposure of the hip are obvious I criticised Mr Bailey's technique because he contended that his instrument replaced close radiological control I remind Mr Bailey that I agreed that skeletal traction *sometimes* reduces, with accuracy, a medial fracture of the femoral neck, but the large majority of these fractures are not so reduced I contended that X rays were wanted first to control the manipulations necessary to obtain accurate reduction in this larger group, and next to confirm the accuracy of the reduction Now, an instrument can place a guide wire with accuracy In common with Mr Bailey I use one that enables me to do this Its advantages are a speeding up of the operation and a decrease in the number of necessary radiograms, but I think that is all we can expect of it

Recently Böhler and Felsenreich (who together have nailed nearly 200 necks) have shown me the complications that can occur during this operation, and I remain quite convinced that the steps of it need the closest "watching" With regard to the complication I instanced in my previous letter I have watched the oncoming nail displace an accurately reduced head from its position on the neck on three occasions in my small series of 28 radiologically controlled operations in spite of the guide wire being in the head fragment. I now transfix small head fragments to the pelvis with a stout guide wire and they are not displaced. This is but one example of planning to circumvent complications as they arise and are seen in the radiologically controlled operation. A Thomas ring around the upper thigh and the patient in bed gives the radiologist little help in his important work, for the films must be of the clearest definition if they are to be of value.

The success of this operation will be judged on its end results and I believe the end results will justify the ordeal of an operation on an orthopædic table under close radiological control.

I am, Sir, yours faithfully,
WILLIAM GISSANE.
St. James' Hospital, S.W., Feb. 28th.

OXYGEN ADMINISTRATION

To the Editor of THE LANCET

SIR,—Recently a box mask was introduced for cheap and efficient administration of oxygen. The mask described previously was for adults (14 years or older). Inquiries having been made as to the application of the mask to younger patients, details are given in the Table below for the correct dimensions of the mask for various ages and also the approximate rates for flow of oxygen for ordinary conditions of pneumonic anoxæmia. Higher rates may be tried if necessary. These rates have been worked out from the tidal air for various ages. The mask may be cut from a suitable light cardboard box and a light rubber tube (internal diameter 5 mm.) in about 10 minutes, following closely the details given in the previous publications (*Brit. med. J.* 1936, 1, 1246 and *Lancet* 1937, 1, 82).

Dimensions of Mask and Rates of Oxygen Flow for Various Ages

Age	Weight in kg.	Tidal air (c.cm.)	Dimensions of mask (cm.)				Rate of oxygen flow litres per minute
			Length	Breadth	Depth	Volume	
0–6 months	3–7	48	6	5	3.5	105	0.7–1
6–18 „	7–12	[illegible]	8	6	4	192	1–2
3–7 years	14.3–19	121–[illegible]	1[illegible]	9	4	132	–3
8–14 „	22–20	221–395	13	10	5	6[illegible]0	3–4
14 years and over (adult)	60–70	140–5[illegible]0	15	12	7	1 [illegible]60	5–6

The efficiency of the mask depends on the inlet tube being turned back on itself and placed in the correct position inside the mask so that the incoming oxygen strikes the middle of the top of the inside of the mask. The opening at the back of the mask to accommodate the nose, mouth and part of the chin must be cut to suit the size of the face of the patient. The mask must be connected with a "Bobbin" flow meter and automatic regulator for the oxygen cylinder as shown in the previous papers mentioned above.

The masks may be made also from aluminium or from a wire frame and a linen or silk covering (makers Siebe Gorman and Co., London, S.E. 1).

I am, Sir, yours faithfully,
London, N.W., Feb. [illegible]th. J. ARGYLL CAMPBELL.

BASOPHIL PITUITARY CARCINOMA

To the Editor of THE LANCET

SIR,—In the annotation in your issue of Feb. 20th upon our case of Cushing's syndrome associated with a basophil carcinoma of the anterior lobe of the pituitary you refer to Crooke's work upon the hyaline change in the cells of the gland in this syndrome, a change which he holds to be characteristic of the condition, whether associated with pituitary, adrenal or thymic tumour. You justly state that our failure to find such change in the malignant cells of the pituitary neoplasm is in no way a refutation of Crooke's views. Since the publication of our article in *Brain* we have satisfied ourselves—and we would gratefully acknowledge our thanks to Dr. Crooke, who has examined some of our material and allowed us access to certain of his preparations—that the surviving basophil cells of the pituitary gland itself which were present in the pars intermedia do in fact show the hyalinisation which he has described.

We are, Sir, yours faithfully,
HENRY COHEN.
J. HILARY DIBLE.
The University, Liverpool, Feb. 24th.

ARTIFICIAL PNEUMOTHORAX ON STATISTICAL TRIAL

To the Editor of THE LANCET

SIR,—I should like to support Dr. Andrew Morland's admirable comments in your issue of Feb. 20th on the result of the recent statistical inquiry into artificial pneumothorax treatment in England. Should another statistical investigation be made in a few years' time I believe the outcome will be very definitely in favour of artificial pneumothorax. Among factors likely to influence favourably such figures are:—

(1) The greater tendency to adopt the treatment in earlier cases.

(2) The more frequent use of thoracoscopy for the division of adhesions.

(3) Paralysis of the diaphragm towards the termination of pneumothorax treatment in selected cases.

(4) Though possibly to a smaller extent, the less conservative attitude to the adoption of bilateral artificial pneumothorax in a larger number of suitable patients.

(5) Indirectly, an improvement in radiological equipment permitting of a more accurate control.

I am, Sir, yours faithfully,
Montana, Switzerland, Feb. 27th. HILARY ROCHE.

HORMONE TREATMENT OF UNDESCENDED TESTIS

To the Editor of THE LANCET

SIR,—The article by Mr. Mimpriss in your last issue raises some important points in regard to the use of gonadotropic hormones in cases of undescended testes. His experience leads him to believe that there are contra-indications to this treatment and many would agree with him here. He now brings forward a new indication for treatment: bilateral cases with subnormal genital development. He records this subnormal state in 9 of his 20 cases with ages from six to thirteen years—although we could exclude case No. 8 on the ground that microgenitalia is a normal feature of the Fröhlich type and is corrected later. If we are to adopt this new indication it will be necessary for us to have a very clear idea as to the normal size of the genitals at different ages. Have we adequate knowledge of this matter? I doubt it, and remarked on the variatio size of these organs in normal boys in your columns (1936, 2 929) I would say in fact that the size of the genitals is one of the most variable features in boys up to full puberty, and would urge that this new indication be not yet adopted as a satisfactory one

I am, Sir, yours faithfully,
PEARSE WILLIAMS

Harley street W Feb 28th

To the Editor of THE LANCET

SIR,—Mr Mimpriss was, we feel, unlucky in inducing descent in only 6 of his 20 cases, and perhaps if he had had better results he would be less seriously impressed with the genital hypertrophy which occurred in 19 of them This complication has been encountered by most of those who have used this form of treatment In our own series of 29 cases successful descent was achieved in 23, and genital hypertrophy was noted in 15 out of 26, but the enlargement of the testes was always one of our objects, and the enlargement of the penis has never struck us as being so undesirable as to cause us to abandon the treatment as Mr Mimpriss did. Nor do we agree with him that hormone therapy should be confined to bilateral cases with subnormal genital development only, for we have found it frequently successful in cases of unilateral failure in descent, sometimes associated with apparently normal genital development

We suggest that the points to be considered in connexion with this form of treatment are —

(1) *The optimum age at which treatment should be instituted* —Spermatogenesis normally begins at the age of 9 and and the longer it is delayed as the result of the ectopic position of the testis the less likely it is to occur should this position be subsequently corrected This is our answer to the statement that 90 per cent of testes descend spontaneously by the age of 16, and that therefore no treatment should be instituted before that age Treatment before the age of 9 may lead to undesirable complications, such as the onset of precocious puberty and the premature awakening of the sexual appetite

(2) *The selection of cases for hormone therapy* —It has been repeatedly pointed out that in cases in which there is some mechanical barrier to normal descent, such as an overlying scar of a previous unsuccessful operation for orchidopexy, hormone therapy is very unlikely to be effective Furthermore, as Spence and Scowen[1] have said failure is probable if the testis is in the abdominal cavity and does not engage at the internal inguinal ring The inevitability of future surgical interference as in those cases associated with a hernia, might conceivably be regarded as a contra indication to hormone therapy on the ground that the ectopic testis can be dealt with at the same time as the repair of the hernia It is, however, a fact that gonadotropic influences may increase the mobility, if not actually lower the position, of the canal dwelling testis, and thereby render orchidopexy less reminiscent of a tug of war Furthermore, as pointed out by McLellan,[2] who advocates both pre and post operative treatment, the testis transferred to the scrotum by orchidopexy may fail to develop in its new surroundings unless encouraged to do so by hormone administration

(3) *The possibility of permanent functional damage to the testis by the use of gonadotropic hormones* —This is referred to by Mr Mimpriss in his paper and darkly hinted at by Cabot[3] The facts are these as the result of continuous administration of gonadotropic extracts, antigonadotropic factors are elaborated in the patient's blood stream which may, if allowed to circulate for a sufficient period, affect the testis adversely but only temporarily As soon as these antigonadotropic substances disappear, as they do when gonadotropic administration is discontinued, the testis rapidly recovers its functional activity In order to avoid this complication treatment should be administered (as Spence and Scowen recommend) in a series of courses separated by intervals of a month or so during which no injections are given

In our opinion no serious contra indication to gonadotropic therapy in undescended testes has yet been brought to light, and we believe that no *harm* can be done if it is applied to any type of case If, however, one is aiming, as one should be, at a high proportion of successful results, a careful selection of cases should be undertaken on the lines outlined above —We are, Sir, yours faithfully,

P M F BISHOP,
A C HAMPSON

Endocrine Clinic Guy's Hospital, S E.

UNIVERSITY OF LONDON MEDICAL GRADUATES SOCIETY

To the Editor of THE LANCET

SIR,—The University of London and its graduates are entering into a new heritage as their great building rises in Bloomsbury, for it will create a centre of university life such as London has long desired The future however will be made by man and not by stones, for the traditional spirit of great centres of learning is created by the men who move in them Our university has yet to develop its traditions in the fullest sense, for hitherto the graduates have had few associations with their university except as an examining body, and among the medical graduates the loyalties of professional life are given chiefly to their own medical schools This has led, in the past, to a narrowing of outlook, and has been a hindrance to progress Lister was a London surgeon, yet London was almost the last of the great centres of medical work to acknowledge the truth of his teaching He himself attributed this to the lack of a university and of the university spirit, which, valuing the search for truth above all else, subordinates to it all considerations of personal advantage

London can never enjoy a university life as intimate as that which exists in smaller towns, but, with the coöperation of its graduates, it has now an opportunity of developing a university spirit and tradition along its own lines

Nine years ago, the University of London Medical Graduates Society was formed to provide a social meeting ground and bring all graduates of the medical faculty of the University into touch with one another The University has recently granted official recognition to the Society, and the annual dinner on May 6th next will be held for the first time in the university banqueting hall. The vice chancellor has signified his intention of attending the dinner, and it is hoped that the occasion will arouse the interest of medical graduates in their university and that many who are not yet members will join Overseas graduates, who may be in London for the Coronation celebrations, will be specially welcome Guests, medical or non medical, may be invited by members

The objects of the Society are, in brief (*a*) to bring medical graduates of the University of London into closer relationship with their university and with one another, (*b*) to keep in touch with "overseas" medical graduates of the University, and (*c*) to promote the interests of the university and its medical graduates The Society has no political activities There is an annual dinner in London during May, and dinners are held in other centres from time to time, whilst an afternoon reception and visits to places of interest take place during the spring

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[1] Spence A W and Scowen E F (1935) *Lancet* 2 1335

[2] McLellan E (1936) *Ibid* 1, 999

[3] Cabot H (1936) *St Thom Hosp Gaz* 35 512

The subscription is one pound for life and applications for membership are invited and welcomed

The address for all communications is 11 Chandos street, London W 1

We are, Sir yours faithfully

DOROTHY C HARE
President
PHILIP H MITCHINER,
Hon Treasurer
LOUISE LIVINGSTONE JOHN P HOSFORD
Hon Secretaries
VICTOR BONNEY
Hon Secretary for Overseas Members.

Feb. 15th

OXYGEN TENTS

To the Editor of THE LANCET

SIR—A statement appeared in the *Times* of March 2nd in connexion with a private venture ambitiously styled the National Oxygen Tent Service The statement is made that the formation of the service was in furtherance of a movement initiated by the British Red Cross Society Work in this country on the oxygen tent was being carried out and an oxygen tent service was in existence long before the Red Cross made tents for the twelve hospitals and they did so as the result of a letter signed by physicians and surgeons on the staffs of those hospitals asking for their help Hence the Red Cross did not initiate any movement moreover they decided they would not themselves undertake an oxygen tent hire service and I am informed that they are not sponsoring this particular venture

As for the so called open top tent itself we are still awaiting published results in this country I doubt whether in general it would be as effective as Dr Argyll Campbell s much simpler face mask

I am Sir yours faithfully

London, W March 2nd   E P POULTON

MENTAL DISORDER AND ENDOCRINE ACTIVITIES

To the Editor of THE LANCET

SIR—With reference to the leading article on this subject in your last issue may I suggest that the most important contribution of endocrinology to psychiatry will prove to be in the field of psychodynamics It is now generally recognised that our mental energy is derived from instinctive tendencies or drives, and since we share many of these instincts with the lower animals their endocrine relationships should be susceptible to investigation by means of laboratory experiment This particularly applies to Freud s libido which plays such a prominent part in modern psychopathology Recent discoveries in endocrinology have thrown a flood of light on the physiology of sex and it should not be difficult to apply this knowledge with a view to elucidating the glandular factors which contribute towards sex drive Biochemists are naturally preoccupied in investigating the action of the various hormones on bodily processes and the claims of psychiatry are liable to be overlooked Experiments dealing with the organic basis of libido could be performed most profitably by those who have had a psychological training but I know from personal experience that it is practically impossible for a man who is working in a mental hospital to obtain financial aid for research of this nature Nevertheless the work should be done by someone—I am Sir yours faithfully

THOMAS D POWER.

Brentwood Mental Hospital Essex March nd

RITUAL PURGATION

To the Editor of THE LANCET

SIR,—May I suggest that there are two sections of the community who should be protected from the devotees of these rites?

(1) Inmates of nursing homes are given large doses of castor oil often on the orders of a nurse regardless of any protest on their part that it either upsets them or that the bowels have already acted that day

(2) Thousands of young children are submitted to the same ritual every Saturday night (whether they need it or not) with the result that Sunday is spent by them in working it off

Is it advisable to add oleum ricini to the list of dangerous drugs?—I am Sir yours faithfully

STELLA CHURCHILL.

Cumberland terrace N W March 1st

To the Editor of THE LANCET

SIR,—If the administration of a purgative be one cause of disturbed bowel habit may I suggest another cause? I refer to the time-honoured system of giving hospital patients their breakfast at 5 30 or 6 A.M The after breakfast call comes not at an established hour of the morning but at a variable number of minutes after the first cup of tea Unfortunately at such a time the night nurse is to be seen distractedly rushing round clearing away trays making beds taking temperatures writing up report &c and it is a brave and heartless patient who has the courage to call for a bed pan This may be moral cowardice or it may be noble sufferance but it happens Nor may the patient be relieved at 8 A.M when the day staff come on (if indeed he has any urge left by this time) for the first half hour or so is taken up by the ceremony of report.

The remedy is simple Let the last duty of the night nurse be the giving of breakfasts at 7 30 A.M and the first duty of the day nurses be the distribution of bed pans at 8 A.M There seems to be the choice between the rhythm of hospital routine and the rhythm of the sphincters

I am Sir yours faithfully

Feb 28th.   STUDENT

TREATMENT OF STREPTOCOCCAL INFECTIONS

To the Editor of THE LANCET

SIR,—In your last issue appears a note on a case of streptococcal septicæmia treated with Prontosil which calls for comment (1) The patient a boy of seven had a leucocyte count of 23 200—i e was establishing a resistance (2) He was given in all 60 c.cm. of antiscarlatinal or antistreptococcal serum (3) After exploration of his gland swelling he became septicæmic Anxious and bitter experience in the treatment of infections by the hæmolytic streptococci has taught me, and many others that everything should be done to raise resistance by open air treatment by the use of abundant fluids (particularly those of high protein content) and by early administration of antiscarlatinal serum preferably by the intravenous route Surgical attack on an inflammatory focus before obvious suppuration has localised and is pointing merely precipitates the invasion of the blood stream Whether the discomfort and alimentary disturbance associated with the daily administration of large quantities of antiseptic drugs is rewarded by cure in desperate cases is still open to argument—I am, Sir yours faithfully

Sherborne March 1st   J WHITTINGDALE

size of these organs in normal boys in your columns (1936, 2 929). I would say in fact that the size of the genitals is one of the most variable features in boys up to full puberty, and would urge that this new indication be not yet adopted as a satisfactory one.

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P. M. F. BISHOP,
A. C. HAMPSON.

Endocrine Clinic, Guy's Hospital, S.E.

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SIR,—The University of London and its graduates are entering into a new heritage as their great building rises in Bloomsbury, for it will create a centre of university life such as London has long desired. The future however will be made by man and not by stones, for the traditional spirit of great centres of learning is created by the men who move in them. Our university has yet to develop its traditions in the fullest sense, for hitherto the graduates have had few associations with their university except as an examining body, and among the medical graduates the loyalties of professional life are given chiefly to their own medical schools. This has led, in the past, to a narrowing of outlook, and has been a hindrance to progress. Lister was a London surgeon, yet London was almost the last of the great centres of medical work to acknowledge the truth of his teaching. He himself attributed this to the lack of a university and of the university spirit, which, valuing the search for truth above all else, subordinates to it all considerations of personal advantage.

London can never enjoy a university life as intimate as that which exists in smaller towns, but, with the coöperation of its graduates, it has now an opportunity of developing a university spirit and tradition along its own lines.

Nine years ago, the University of London Medical Graduates Society was formed to provide a social meeting-ground and bring all graduates of the medical faculty of the University into touch with one another. The University has recently granted official recognition to the Society, and the annual dinner on May 6th next will be held for the first time in the university banqueting hall. The vice-chancellor has signified his intention of attending the dinner, and it is hoped that the occasion will arouse the interest of medical graduates in their university and that many who are not yet members will join. Overseas graduates, who may be in London for the Coronation celebrations, will be specially welcome. Guests, medical or non-medical, may be invited by members.

The objects of the Society are, in brief: (a) to bring medical graduates of the University of London into closer relationship with their university and with one another; (b) to keep in touch with "overseas" medical graduates of the University; and (c) to promote the interests of the university and its medical graduates. The Society has no political activities. There is an annual dinner in London during May, and dinners are held in other centres from time to time, whilst an afternoon reception and visits to places of interest take place during the spring

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[1] Spence, A. W., and Scowen, E. F. (1935) *Lancet*, 2, 1335.

[2] McLellan, F. (1936) *Ibid*, 1, 999.

[3] Cabot, H. (1936) *St Thom. Hosp. Gaz.* 35, 512.

The subscription is one pound for life and applications for membership are invited and welcomed.

The address for all communications is 11 Chandos-street London W 1

We are Sir yours faithfully
DOROTHY C HARE,
President
PHILIP H MITCHINER,
Hon. Treasurer
LOUISE LIVINGSTONE JOHN P HOSFORD
Hon Secretaries
VICTOR BONNEY
Hon Secretary for Overseas Members

Feb 15th

OXYGEN TENTS

To the Editor of THE LANCET

SIR —A statement appeared in the *Times* of March 2nd in connexion with a private venture ambitiously styled the National Oxygen Tent Service The statement is made that the formation of the service was in furtherance of a movement initiated by the British Red Cross Society Work in this country on the oxygen tent was being carried out and an oxygen tent service was in existence long before the Red Cross made tents for the twelve hospitals and they did so as the result of a letter signed by physicians and surgeons on the staffs of those hospitals asking for their help Hence the Red Cross did not initiate any movement moreover they decided they would not themselves undertake an oxygen tent hire service and I am informed that they are not sponsoring this particular venture

As for the so called open top tent itself we are still awaiting published results in this country I doubt whether in general it would be as effective as Dr Argyll Campbell s much simpler face mask

I am Sir yours faithfully
E P POULTON

London W March 2nd

MENTAL DISORDER AND ENDOCRINE ACTIVITIES

To the Editor of THE LANCET

SIR —With reference to the leading article on this subject in your last issue may I suggest that the most important contribution of endocrinology to psychiatry will prove to be in the field of psychodynamics It is now generally recognised that our mental energy is derived from instinctive tendencies or drives, and since we share many of these instincts with the lower animals their endocrine relationships should be susceptible to investigation by means of laboratory experiment This particularly applies to Freud s libido which plays such a prominent part in modern psychopathology Recent discoveries in endocrinology have thrown a flood of light on the physiology of sex and it should not be difficult to apply this knowledge with a view to elucidating the glandular factors which contribute towards sex drive Biochemists are naturally preoccupied in investigating the action of the various hormones on bodily processes, and the claims of psychiatry are liable to be overlooked Experiments dealing with the organic basis of libido could be performed most profitably by those who have had a psychological training but I know from personal experience that it is practically impossible for a man who is working in a mental hospital to obtain financial aid for research of this nature Nevertheless the work should be done by someone —I am Sir yours faithfully

THOMA D IOWTH

Brentwood Mental Hospital Essex March 2nd

RITUAL PURGATION

To the Editor of THE LANCET

SIR,—May I suggest that there are two sections of the community who should be protected from the devotees of these rites ?

(1) Inmates of nursing homes are given large doses of castor oil, often on the orders of a nurse regardless of any protest on their part that it either upsets them or that the bowels have already acted that day

(2) Thousands of young children are submitted to the same ritual every Saturday night (whether they need it or not) with the result that Sunday is spent by them in working it off

Is it advisable to add oleum ricini to the list of dangerous drugs ?—I am Sir yours faithfully

STELLA CHURCHILL.

Cumberland terrace N W March 1st

To the Editor of THE LANCET

SIR,—If the administration of a purgative be one cause of disturbed bowel habit, may I suggest another cause ? I refer to the time honoured system of giving hospital patients their breakfast at 5 30 or 6 A.M The after breakfast call comes not at an established hour of the morning but at a variable number of minutes after the first cup of tea. Unfortunately at such a time the night nurse is to be seen distractedly rushing round clearing away trays making beds taking temperatures writing up report &c and it is a brave and heartless patient who has the courage to call for a bed pan This may be moral cowardice or it may be noble sufferance but it happens Nor may the patient be relieved at 8 A.M when the day staff come on (if indeed he has any urge left by this time) for the first half hour or so is taken up by the ceremony of report.

The remedy is simple Let the last duty of the night nurse be the giving of breakfasts at 7 30 A.M and the first duty of the day nurses be the distribution *of bed pans at 8 A M* There seems to be the choice between the rhythm of hospital routine and the rhythm of the sphincters

I am Sir yours faithfully
STUDENT

Feb. 8th

TREATMENT OF STREPTOCOCCAL INFECTIONS

To the Editor of THE LANCET

SIR,—In your last issue appears a note on a case of streptococcal septicæmia treated with Prontosil which calls for comment. (1) The patient a boy of seven had a leucocyte count of 23 200—i e was establishing a resistance (2) He was given in all 60 c.cm of antiscarlatinal or antistreptococcal serum (3) After exploration of his gland swelling he became septicæmic. Anxious and bitter experience in the treatment of infections by the hæmolytic streptococci has taught me, and many others that everything should be done to raise resistance by open air treatment by the use of abundant fluids (particularly those of high protein content) and by early administration of antiscarlatinal serum preferably by the intravenous route Surgical attack on an inflammatory focus before obvious suppuration has localised and is pointing merely precipitates the invasion of the blood stream Whether the discomfort and alimentary disturbance associated with the daily administration of large quantities of antiseptic drugs is rewarded by cure in desperate cases is still open to argument —I am Sir yours faithfully

J WHITTINGDALE.

Sherborne March 1st

PANEL AND CONTRACT PRACTICE

The Drug Bill

LANCASHIRE is well known as a "peak" area in respect of the increasing cost of providing medicines for the insured population The report of the panel committee following investigation of the prescribing of a Lancashire doctor for the first quarter of 1936 shows a total cost of £157 9*s* as against an average for the same number of persons in the area of £106 0*s* 4*d* The difference of over £50 was attributed mostly to the number of prescriptions but partly to the high cost of ingredients

Dr X had prescribed during the quarter for 42 80 per cent of his total list as against an average percentage, based on figures for three years on a large sample of cases, of 37 12 per cent He had issued 4 821 prescriptions per person prescribed for, as compared with a calculated expectancy of 3 71 The relevant figures from four local comparable practices were 37 44 per cent and 3 902 prescriptions As to the cost, the average proportion of prescriptions in England ordering proprietary preparations is just over 1 per cent, costing 4 5 per cent of the whole Dr X's proprietaries averaged 5 8 per cent, and their cost 19 4 per cent of his total prescription cost Dr X was unable to offer an explanation with regard to his number of prescriptions He did not practise in a particularly poor district where there was an unusual amount of unemployment, he maintained that all the patients prescribed for needed attention, and that no unnecessary prescriptions had been issued

The panel committee found some difficulty in estimating the amount of excess, owing to lack of precise evidence The total cost of proprietaries was £14 2*s* 5*d*, and while it was agreed that often there was no actual equivalent, it was submitted that other formulæ could be used with a similar therapeutic effect About £5 might have been saved by the use of non proprietary articles Greater difficulty was experienced in estimating the excess due to "undue frequency," but the fact that many scripts contained two or more prescriptions (3367 scripts = 4233 prescriptions) was held to have some bearing on the matter

The panel committee considered that in a list of over 2000 most consultations would probably be in respect of slight ailments, for which the appropriate remedy would cost little Few of the samples of the scripts examined were found to cost less than the average cost of a prescription issued in the area Very little use appeared to have been made of the National Formulary

The insurance committee decided, subject to there being no appeal by the practitioner, to make representations for the withholding of £40, which was the amount suggested by the panel committee as the minimum imposed on the Drug Fund in excess of what was reasonably necessary

A Satisfactory Compromise

The medical service subcommittee is often reviled and it is well to record a hearing with an ultimate result satisfactory to both parties An insured person was taken ill while on a visit at an address outside the area of the practice of his insurance practitioner The relatives did not know he was an insured person and called in a local practitioner, who gave the patient the option of treatment in hospital or in a nursing home The patient chose the nursing home and was treated there by the practitioner At some time during his stay the patient asked the practitioner whether he was "on the panel," but did not say he was insured nor asked to be treated as an insured person Private certificates were issued, and in due course an account amounting to £11 16*s* was rendered. The insured person told the subcommittee that he was under the impression that the fees for the nursing home were inclusive of medical attendance, and he felt that the account rendered by the practitioner was somewhat excessive The practitioner said that he was under the impression throughout that he was treating a private patient, and added that if the patient had told him that he found difficulty in paying his account he would have been prepared to adjust it The practitioner voluntarily offered in the circumstances to accept £4 in settlement of his account, and this was willingly paid. The subcommittee in their report note their view that the practitioner made a generous offer, and their satisfaction that the question had been adjusted amicably without any recommendation from them

"Outside the Scope"

Among the (round) 2000 practitioners on the London panel only 22 charged, or contemplated charging, insured persons fees during the year 1936 for treatment outside the scope of medical benefit, but rendered by them owing to their special experience in that class of work. The number of cases notified was 110 and in every case the relevant committees agreed that the practitioners concerned were possessed of the necessary skill and experience to enable them adequately to carry out such services Sixty two cases referred to ophthalmic services—but it should be remembered that notifications are required only when the practitioner renders such a service for one of his own insured patients—24 related to treatment by ultra violet rays, 4 were psychotherapy for anxiety neurosis Most of the remaining 20 were in respect of surgical services, 1 was an X ray for suspected Pott's fracture, and 1 was the administration of an anæsthetic for tonsillectomy by dissection When the operation is outside the contract and is performed by a second doctor, the anæsthetic being given by the insured person's own doctor, no fee is chargeable either to the practitioners' fund or to the patient—unless, as in this case, the giving of the anæsthetic is itself a specialist service

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LINCOLN COUNTY HOSPITAL —This hospital received the record income of £23,953 last year an increase of over £2000 on the previous year The extensions fund now stands at £50,500 and the overdraft is reduced to £5500

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION —A week-end course in urology will be given at the All Saints' Hospital on March 20th and 21st

The following courses are available for M R C P candidates heart and lung diseases at the Royal Chest Hospital (on Mondays, Wednesdays, and Fridays March 1st to 19th) neurology, West End Hospital for Nervous Diseases (afternoons, March 8th to 19th) A demonstration on pulmonary tuberculosis will be held at Preston Hall on April 3rd A mock trial of a motorist accused of being under the influence of alcohol will be held on Thursday, March 11th at 8 30 P M Admission will be by ticket only Full details of the trial, and of all courses, can be had from the secretary of the fellowship, 1, Wimpole street, W

OBITUARY

SIR HENRY JACKSON Bt M B Edin , B Sc Lond

As was announced briefly last week Sir Henry Jackson the well known authority on transport and traffic questions died suddenly on Feb 24th. He collapsed at the dinner of the Wandsworth branch of the London Association of Local Government Officers and died immediately at the Bolingbroke Hospital to which he was taken after the seizure

Henry Jackson was born at Heywood, Lancashire in 1875 He received his education at the Bury grammar school and proceeded to Cambridge where he obtained a first class in the natural sciences tripos in both the first and second parts, in the interval taking the degree of B Sc at the University of London He was elected a fellow of Downing College Cambridge where he was a science lecturer and was for ten years tutor While at Cambridge he became a Fellow of the Cambridge Philosophical Society and contributed papers also to the Royal Society and the Chemical Society At this point he relinquished his academic career in response to a call to play a fuller part in social activities He graduated as M.B Ch.B in the University of Edinburgh and went into general practice in Putney where he soon became a marked man both for professional capacity and his interest in municipal affairs During the war he served in the R.A M C with the rank of major and at the conclusion of hostilities returned to his medical practice In 1921 he was elected Mayor of Wandsworth He held this municipal post for three years, and in 1924 was elected Member of Parliament for Wandsworth. He sat as a conservative but with the greatest interest in the welfare of those whose position submitted them to a life of struggles He held the seat for five years losing it in 1929 when his defeat at the poll caused some surprise ; but he regained the seat two years later his popular claims being unexceptionable In 1935 he was re elected and was representing the borough at the time of his death. By this time he had established a high position in the House, as a committee man and as one to whom municipal life and especially the increasing difficulties presented in the conduct of urban traffic made a particular appeal. Throughout all the latter part of his parliamentary career he was recognised as an authority on traffic problems the subject upon which most of his contributions to debate were directed. He was appointed chairman of the London and Home Counties Traffic Advisory Committee and became chairman of the special subcommittee which considered the question of the new bridge at Charing Cross The subcommittee was formed at the instance of the Ministry of Transport and Jackson s selection to preside over its counsels was approved by all his colleagues in the House

[Photograph by Elliott & Fry

SIR HENRY JACKSON

He was never regarded as a party man, although he was chairman of the Conservative London Members Committee nor as a medical man although he presided over the Medical Committee of the House His medical knowledge was displayed by the part which he played in debates affecting many sides of the municipal life and the status of municipal officials and the practical dealing with questions where public health and official administration came into contact made a close appeal to him Before his other duties became so pressing he was an active member of the London Voluntary Hospitals Committee and sometimes occupied the chair at its meetings

Through his many relationships in public life in his parliamentary constituency and within the House of Commons Jackson established a fine reputation as a man of affairs He was sound industrious and kind and was assisted in all the work which he undertook by his bluff and equable personality His death when there might well have been expected for him a considerable extension of time in which to see the fruits of his labours is a source of wide grief to a large circle of fellow workers and friends

He married in 1904 Edith Margaret Smalley of Norton Grange Castleton Lincs who survives him, but there were no children of the marriage He was knighted in 1924, the year in which he commenced his Parliamentary career and was created a Baronet in 1935 He was 61 years of age

THOMAS MARTIN CORKER C.B M D R U.I

The death occurred in London at the age of 80 on Feb 24th of Major General Thomas Martin Corker a distinguished member of the R.A.M.C He was born in Co Cork the son of the late T W Corker He studied medicine for four years at Queen s College, Cork, where he was a gold medallist and senior scholar taking degrees in science with first class honours and distinguishing himself as an athlete. He then turned to medicine and entered St Bartholomew's where he again established himself in the forefront of both scholastic and athletic worlds To quote his own words while working at Bart s I was still applying for divers chairs—in natural history geology botany For these he obtained excellent testimonials from his teachers but having graduated M D at Queen s College Cork in 1879 he joined the R.A.M.C which he served for 38 years the greater part being spent in the East He was on the North West Frontier in the Khyber Pass in 1880–81 and again during the serious outbreaks of 1897–98 against the Mohmands and in the Tirah campaign against the Afridis In the latter he took part in the battles for the passes of Sampagha and Arhanga and in the four days march in intense cold down the Bara valley the worst part of the campaign For this he was mentioned in despatches and received two clasps for his medal. Promoted a colonel in 1905 he became principal medical officer successively to the commands in Scotland Egypt and Cape Colony He returned to India in 1911 on becoming a surgeon general and was D D M S first of the Lucknow division and subsequently of those in Poona and in Secunderabad He was honorary physician to the King from 1912 to 1918 He made his mark during the years of the late war where he did administrative work of great responsibility, and for his services he was created C B and a Knight of St John of Jerusalem He retired in 1918, and two years later his university honoured him with the degree of LL D

Major General Corker had a ready pen which he used to the best advantage both in respect of his military work and in more popular spheres For example, he published articles in *The Cricketer*, and three years ago reminiscences of his student days in the *St Bartholomew's Hospital Journal* In the daily press he occasionally wrote vigorously on political matters, and particularly about the recent changes in India Latterly he was often to be seen at his old hospital where he showed great interest both in present problems of medical education and in the students' activities He will be remembered for his reliability—the key to the success of his career—and for his effervescent good humour

General Corker leaves a widow, Florence, the daughter of J E Leslie of Passage West, Co Cork

FREDERICK RANSOM, M.D Edin

Dr F P F Ransom, who died on Feb 23rd at the age of 87, qualified M R C S Eng in 1871 and became M.D Edin in 1875 His chief interest was pharmacology and it was this subject he studied abroad in Berlin and then in Halle and Marburg, working for a period as assistant to von Behring and Hans Meyer In 1910 Dr Ransom was elected to a Beit fellowship, and worked at Cambridge, with W E Dixon, on the action of caffeine and theobromine From 1912 to 1924 he held a readership and subsequently a chair in the University of London at the London (R F H) School of Medicine for Women, where he established the department of pharmacology He was one of the earliest teachers to recognise the importance of providing a course of experimental instruction for students, and he thus succeeded in stimulating their interest in a subject which had till then been studied in a rather perfunctory way His personal work was largely concerned with tetanus and diphtheritic paralysis, and with the mechanism of immunity He was a wide reader as well as an enthusiastic research worker His knowledge was readily placed at the disposal of colleagues and students, and he spared neither time nor energy in their service All those who have ever worked with or under him will remember with gratitude his helpfulness and his kindly, modest, and courteous personality

Dr Ransom's last years were spent in retirement in the country he loved, where in spite of failing eyesight, he followed with keen interest the trend of modern pharmacological research.

ALEXANDER MANUEL, M B , B S , M.R C P Lond

Dr Alexander Manuel, who died suddenly in Mexico City on Feb 22nd, was not often seen in London of late years, but his death will be a source of grief to many friends Of Greek extraction, he was a son of the late Mr M. B Manuel, of Marlborough Gate, Hyde Park, was born in 1878, and educated at Winchester and St George's Hospital. He obtained the English double diplomas in 1905 , in 1907 he proceeded to the M B , B S Lond , and in the following year took the M.R C P Lond After qualification he worked at the Victoria Hospital for Children before becoming house physician at St George's He was elected physician to the French Hospital and to the Hampstead General Hospital, as well as to the Victoria Hospital for Children During the war he served overseas, but his health broke down and he was never able to return to London practice After the war he lived abroad, and practised during the season in Bordighera, where he had a lovely villa, and at Monte Carlo

We owe the following note to a personal friend of long standing, a fellow Wykehamist

"At the start of his career Alec Manuel was possessed of ample private means , it was not necessary for him to work for his living, and it speaks for his strength of character and interest in his profession that he should have devoted as much time to hospital work as he did

"Always most generous in disposition, of late years, in spite of financial losses, he remained the same cheery soul that he always had been He had travelled much, was full of interesting information, and was a most versatile man, and in student days was a great chess player I knew him from school days, and when last I met him he was full of reminiscences , I shall always remember his joyous chuckle as he recounted some difference of opinion he had with his form master over a point in the Iliad, and the next moment spoke of his experiences with the ground ash at the hands of a prefect " R R J

NOEL CHARLES BEAUMONT, M R C S Eng

Dr N C Beaumont, who died on Feb 21st at his house in Stainland, near Halifax, had been district medical officer for Stainland for over a quarter of a century He received his medical education at St Bartholomew's Hospital and took the English double qualifications in 1901 He held resident appointments as surgeon and anæsthetist at the Royal Bournemouth Hospital, after which he proceeded to Port Moresby, Papua, as chief government medical officer On return to England he went into practice in Stainland and was appointed medical officer to the local authority As general practitioner and as official he did excellent work supporting the social organisations of the community, while he showed particular interest in questions of industrial medicine as they arose in the neighbouring factories He was 63 years of age at the time of his death

JOHN HOMER MILLER, M B , Ch B Glasg

THE death is announced at the age of 42 of Dr John Homer Miller who had a fine war record Born at Craigwen, Pontypridd, he received his medical education at Cardiff and the University of Glasgow Previous to qualification he joined as a private the Cameron Highlanders, and received a commission in the Manchester Regiment while serving in France, he was awarded the M C with bar and also obtained the Italian medal for valour At the close of hostilities he entered the University of Glasgow as a medical student and graduated as M B , Ch B in 1922 He then acted as medical officer to the Anglo Persian Oil Company, and was absent from this country in Persia for three years On his return he was attached to the staff at Glanely Hospital, and at the time of his death was senior resident medical officer at the Heathfield Hospital, Ayr, where he was in charge of the tuberculosis wards

PARLIAMENTARY INTELLIGENCE

XCHEQUER GRANTS AND LOCAL HEALTH SERVICES

In the House of Commons on Feb 24th Sir KINGSLEY WOOD, Minister of Health moved the econd reading of the Local Government (Financial Provisions) Bill. He said that this was the first time hat the House had been enabled to consider the grants made under the Local Government Act of 1920 t had been a successful measure whose repeal no party n the State would advocate to-day for none wished o revert to the old percentage system which had been illogical and often unjust The block grant with its famous and ingenious formula took account of the principal factors which governed the need of a locality and through the 1929 Act local authorities had been given much greater freedom in their administration. since 1929 the services of local authorities had reached a much higher standard. There had been for instance a great development in rural sewerage and water schemes and the total expenditure on maternity and child welfare in England and Wales had risen by no less than 25 per cent in the period 1929–35 and on all services by 0 per cent Already in a considerable number of areas the Exchequer met 55–65 per cent of the local expenditure and in the whole country 44 0 per cent But Exchequer subsidies could not go beyond a certain limit without the imposition of some direct control thus sapping the local government institutions and in some areas ending them altogether

Since 1920 however there had been considerable movements of population a decline in the birth rate a quinquennial revaluation a revival of industry in many areas and continued depression in others After long and close discussion with the authorities therefore, the proposals in this Bill had been framed. Summing up its ten main proposals Sir Kingsley Wood said that the Bill provided for the following (1) an increase in the general Exchequer contribution to local authorities of £2,250 000 more than at present; (2) a minimum proportion in the future of 22½ per cent (3) a further relief to local authorities by wiping out expenditure amounting to £2 750 000 (4) a modification of the formula so that grants should be allocated with particular help to those areas that needed it most (5) a favourable basis for the local authorities in calculating weighted population' for estimating the additional Exchequer grants (0) a mitigation of the effect of the fall in this weighted population by increasing the cost of the grants to the Exchequer by another £150 000 and this would also be effected without reducing standard sums on account of the merging of the unemployment contributions, producing another £150,000 for the local authorities (7) a revised provision for the prospective losses of special and parish rates, so that county councils might be enabled to make further contributions; (8) a further provision partly at the cost of the Exchequer to meet cases of difficulty among separately rated losing areas (0) provision for London so that further relief might be given to the poorer boroughs; and (10) a complete investigation of the working of the new formula and of internal distribution in good time before the whole of the block grant had been distributed on the basis of the formula alone

Mr ARTHUR GREENWOOD said that he did not believe the revised formula would work more justly than its predecessor The real trouble of the local authorities was the restriction of their resources. The poorer they were the heavier was the rate burden for a given standard of service but it was just in these poorer towns that the social services were most needed and he went on to quote statistics from the distressed areas showing the small proportion of children in these areas that received free milk or meals. He asked the Minister of Health to review the state of local authorities in the light of modern conditions and consider whether there were not certain services which ought now to be made national or regional responsibilities Secondly the whole basis of the financial relations between the State and the local authorities ought to be reviewed with a new partnership between the two the State taking a more active part in assisting local authorities to recovery While so far as this Bill went he would say for this relief much thanks he contended that it held no solution for the great problem with which they were faced.

Mr KINGSLEY GRIFFITHS said he thought that the formula of the Act of 1929 had stood the test of time and that this revision was another honest effort to meet the addtional necessities that had arisen since that year He therefore gave it a very hearty welcome, within its limited scope

After further debate Sir FRANCIS FREMANTLE said that he thought the passing of the Local Government Act of 1929 had been a tremendous step in advance To test the first seven years experience of the system he took the figures for infant and child mortality which were to be regarded as a good index of public health work. In 1922 deaths among infants per 1000 births numbered 77; in 1929 they had come down only to 74; but in the last seven years they had been reduced to 57, and there was a similar record of progress all along the line For this improvement he held responsible the removing of the percentage grants and the provision of block grants together with the other parts of the 1929 Act. He congratulated the Minister on having brought in a very difficult and unpopular Bill, but one that was nevertheless of great value in promoting public well being.

Mr R. S HUDSON Parliamentary Secretary to the Ministry of Health, replying to the debate, said that one of the main reasons why the Government had abandoned the percentage grant system was that it gave far more to the rich areas that could afford to spend money than to the poorer areas which could not afford to spend money It was because the Government recognised that the poorer towns with low rateable value needed more services and were less able to pay for them by themselves, that they devised this formula which provided weighting for the poorer towns with lower rateable value and higher unemployment. The figures given by the Minister of Health recently in the House about the maternity services completely disproved the statement which was made when the Act of 1929 was going through the House, that the social services would tend to be starved because the local authorities would not have any money to pay for progressive increases Figures from South Wales for example, had shown a substantial increase in the expenditure on maternity services and there was no evidence of starvation there If certain local authorities had not provided enough meals to an adequate number of school children the answer to that was that they could have done so if they had wanted to Whatever might have been the position in the past they would certainly have no excuse for not doing it now under the new increased grants that would be given

The Bill was read a second time and the financial resolution in connexion with it was agreed to in Committee

NOTES ON CURRENT TOPICS

National Health Insurance Bill

In the House of Lords on Feb 25th Viscount GAGE moved the second reading of the National Health Insurance (Amendment) Bill It was he said a purely formal measure which involved no new question of principle or policy It was really a drafting amendment to the National Insurance Act 1936 and it had become necessary through changes of nomenclature introduced by the Pharmacy and Poisons Act 1933 Contracts were made usually by the insurance committee of each county or county borough with chemists for the supply of medicines to insured persons Since the beginning of the national health insurance scheme corporate bodies equally with individuals had been entitled to enter into these contracts provided that dispensing was carried out by or under the direct supervision of qualified pharmacists When the consolidating National Health Insurance Act, 1936, was being framed the persons entitled to undertake dispensing for health insurance purposes were described in language which was considered to be the true effect of existing enactments, but since then doubts had arisen whether the words actually covered the case of corporate bodies, and it appeared that Parliament might unwittingly have deprived them of the rights which they had always had. This Bill substituted more appropriate words with the object of regularising the contracts which had already been entered into with corporate bodies, and of making it clear that they could be entered into in future on the same basis as before the Act of 1936 was passed

The Bill was read a second time and later passed through committee without amendment

Factories Bill

On Feb 25th the Factories Bill was considered by a standing committee of the House of Commons On Clause 1 (which provides that every factory shall be kept in a clean state and the floor of every workroom shall be cleaned at least once a week by washing, sweeping, or other method), Mr R J Davies moved an amendment that such cleaning of floors should be done at a time when work was not going on in the workroom —Mr G Lloyd, Under-Secretary, Home Office, pointed out that the adoption of this amendment would make impossible the position of factories working a three-shift system, and it was withdrawn

CUBIC SPACE

On Clause 2 (which provides that a factory shall be regarded as overcrowded if the workpeople have less than 400 cubic feet of space each), Mr R J Davies moved an amendment to leave out a proviso that for five years the figure should be 250 cubic feet, and should afterwards continue at the lower figure where a workroom had effective mechanical ventilation He said that the whole purpose of the clause was weakened by the proviso —Mr Lloyd said that there was no other way than by these elastic powers to meet the varying conditions of British industry There were small concerns, in which to raise the minimum cubic space per head from 250 to 400 feet—an increase of 60 per cent —would involve hardship, not only on the occupiers but on the workpeople They would not be able to carry on with their existing workpeople and would have either to close down or discharge the extra people who could not be accommodated under the new provisions Modern research had shown that the movement and circulation of air were more important than the actual gross cubic feet of space available On the other hand, the Government recognised that it was desirable in certain circumstances to lay down conditions as quickly as possible They had put down amendments in terms practically the same as those proposed by Mr Davies, and they proposed to take power in special cases to bring the condition as to mechanical ventilation into operation before the end of the five years —Sir E Graham-Little supported Mr Lloyd in his contention that the movement of air was more important than the amount of cubic space allowed All modern research confirmed that —Mr Banfield said they had had some experience of this kind of proviso with regard to underground bakehouses They were presumed to have been abolished by an Act of Parliament passed nearly 30 years ago, but that Act had a proviso of this kind that provided premises were in continuous occupation and complied with a certain amount of cubic air space they could be used as bakehouses In London to-day there were still scores of underground bakehouses which were totally unsuitable He appealed to the Government to lay down a definite period within which the 400 cubic feet provision should come into operation —Mr Short said that he quite realised the importance of some measure of elasticity in legislation, but the proviso as drafted, and even with the amendments proposed by the Under-Secretary for the Home Office, did not, he thought, provide all the necessary safeguards —Mr Lloyd said that the Home Office had endeavoured to meet a number of these points in a spirit of accommodation He had asked one of the factory inspectors to come to that committee room on the previous day and calculate what would be the effect of this provision He (Mr Lloyd) found that under the 1901 Act 132 people could be employed in the room, but working under the present Factories Bill under the 400 cubic feet standard, only 50 people would be allowed He was disposed to believe that on the whole the provisions in the Bill were reasonable The International Labour Office standard was 350 cubic feet, which was less than that in the Bill The Home Secretary would have power to increase the number of cubic feet which must be allowed for every person in special circumstances —Mr Davies, in asking leave to withdraw the amendment, said that they would be compelled to consider the whole of this problem on the report stage. From 1875 a minimum of 300 cubic feet had been provided per person in a common lodging-house, it was wrong for workers in factories to have a smaller space to work in than a tramp sleeping in a common lodging house He looked upon mechanical ventilation in a factory as he did upon artificial teeth in a man's mouth, it was a second best —The amendment was withdrawn

In the House of Commons on March 1st Mr Elliot Secretary of State for Scotland, introduced the Local Government (Financial Provisions) (Scotland) Bill, a measure to amend Part III of the Local Government (Scotland) Act, 1929, and to repeal so far as relating to Scotland Section 45 of the Unemployment Assistance Act, 1934 —The Bill was read a first time.

QUESTION TIME

WEDNESDAY, FEB 24TH

Capitation Fee for Adolescents

Mr Rostron Duckworth asked the Minister of Health whether any agreement had now been reached in respect of the medical fee for juvenile patients shortly to be brought into health insurance —Mr Hudson, Parliamentary Secretary to the Ministry of Health replied No agreement has yet been reached but the matter is again to be brought before my right hon friend by a deputation from representatives of the medical profession very shortly

Industrial Workers and Dermatitis

Mr Gardner asked the Home Secretary whether he would consider giving legal force to an opinion first expressed by his department in 1931 and confirmed by him in a letter, dated Jan 5th 1937, in connexion with an industrial process in which a material known as glass silk was used namely that persons employed in handling this material should be provided with protective clothing, respirators and goggles in order that the admitted risks of dermatitis and irritation of the throat and nasal passages might be as far as possible avoided —Mr Lloyd, Under Secretary, Home Office replied I am advised that the experience of the Factory Department has not proved the effects of this material to be so serious as was feared in 1931, and the Home Office letter of last month did not go so far as to confirm the views expressed six years ago I am however, having special inquiries made with a view to considering what further action is called for

THURSDAY FEB 25TH

The Press and Intrusion into Private Griefs

Sir Assheton Pownall asked the Home Secretary whether he had now heard from the Newspaper Proprietors' Association with regard to the recommendations of its committee on the subject of complaints against certain press representatives —Sir John Simon replied A few hours ago I received a letter from the Newspaper Proprietors' Association which I am causing to be published

[The letter states that the following resolution had been passed unanimously by the Association: The council of the Newspaper Proprietors Association strongly condemn methods of news gathering which may cause unnecessary distress to private persons Cases such as those which have recently received publicity in the House of Commons and elsewhere have the disapproval of all newspapers represented in the council and every effort will be made to ensure that no such charges can be made against them or their representatives. It concludes by saying that the council "will continue to employ every effort to avoid undue and improper intrusion into private griefs. They hope it will be appreciated that freedom in the collection and publication of news is just as important to a free press as freedom in the expression of views, and that all possible facilities will be granted to newspapers to maintain properly and efficiently their service of information "]

Workmen's Compensation

Mr BROOKE asked the Home Secretary if it was the intention of His Majesty's Government to take the necessary steps to bring the law and practice of workmen's compensation in this country into harmony with the principles of the International Labour Convention of 1925, on workmen's compensation, and thus enable this country to ratify the Convention —Sir JOHN SIMON replied: I am advised that this Convention could not be ratified without far reaching changes in the law and medical arrangements of this country and I see no prospect of such legislation being passed at present

Mr BROOKE Can the right hon gentleman say whether the Departmental Committee now considering this matter are also considering whether it is possible to bring the law of this country into harmony with the International Labour Convention ?

Sir J SIMON I know that very far reaching changes are involved

Mr BROOKE Is it not possible to bring the law up to the standard of the International Convention ?

Sir J SIMON: I should like to have notice of that question

Accommodation for Mental Patients in Lancashire

Mr WILLIAM ROBINSON asked the Minister of Health whether in view of the fact that patients at present in various mental hospitals in Lancashire were in excess of the number allowed by statute and that in addition, there were cases awaiting transfer from public hospitals in Liverpool and Lancashire he would make investigations as to the cause of the delay in obtaining the approval of the Board of Control to schemes submitted to them and if he would urge the Board of Control to expedite their approval of the Brockhall certified institution extension scheme which had been under consideration by them for about three years.—Sir KINGSLEY WOOD replied: I am advised that the present inadequacy of accommodation for mental patients in Lancashire is not in any way due to delay on the part of the Board of Control in approving either the Brockhall Institution extension or any other schemes submitted to them by the Lancashire Mental Hospitals Board

Health Insurance Additional Benefits

Mr JAMES GRIFFITHS asked the Minister of Health whether he was aware that the disparity between the additional benefits provided by approved societies under the National Health Insurance Acts was having a serious effect upon the position of the poorer societies; that members were seeking to be transferred to the richer societies that provided the higher additional benefits and whether he proposed to take steps to coördinate the administration of the Acts in such a way as to provide uniform benefits for uniform contributions.—Sir KINGSLEY WOOD replied: I am aware of the considerations mentioned but statutory provision is already made for the protection of any society against transfer of membership due to unfavourable valuation results Equalisation of benefits would be incompatible with the retention of the approved society system of administration and I see no sufficient reason for altering that system at the present time

Lancashire Mental Hospitals Board

Mr KIRBY asked the Minister of Health whether the decision of the Lancashire Mental Hospitals Board to charge the local authorities an additional 2*d* per day per patient had been finally approved; and, if so whether he could give the reason for the proposed increase — Sir KINGSLEY WOOD replied The proposed increase is a matter for the Lancashire Mental Hospitals Board and does not require my approval I understand however that it is due mainly to a rise in the wages bill of the nursing staff owing to the adoption of a shorter working day and to an advance in the price of commodities such as coal and flour

Raw Milk and Scarlet Fever

Mr ROBERT MORRISON asked the Minister of Health whether in view of the evidence contained in the annual report of the chief medical officer of his department for 1935 of serious outbreaks of scarlet fever solely due to the sale of raw milk he would consider the making of regulations providing for the compulsory pasteurisation of all milk.—Sir KINGSLEY WOOD replied: I have no power to make such regulations

Water Pollution near Manchester

Mr McGHEE asked the Minister of Health if his attention had been called to the serious pollution of the water supply at Ringway near Withenshawe Manchester; and what steps he proposed to take to secure adequate supplies of pure water to the residents of this area — Sir KINGSLEY WOOD replied Yes, Sir I am communicating with the Manchester Corporation with a view to arrangements being made to provide a pure supply at an early date

MONDAY MARCH 1ST

Illness among Post Office Employees

Mr VIANT asked the Postmaster-General if he would give the number of employees in the London district of the Post Office engineering department who were absent through illness and the average duration of such illness, for the years 1934 1935 and 1936 and the number of employees employed for each of the aforementioned years —Major TRYON replied as follows

Year	No of employees.	Absent at any time during the year on sick leave	Average sick absence per person employed (in days)
1934	9,300	4028	8 8
1935	10 177	5390	8·2
1936	11 068	6187	7 7

Air Raid Precautions

Mr WILSON asked the Home Secretary what plans had been made by the Air Raid Precautions Department for the provision of gas-proof shelters for public use equipped with filtration units and pumps.—Mr GEOFFREY LLOYD replied: It is proposed that as far as possible members of the public should remain indoors in a part of their home or place of work which has been adapted as a refuge in accordance with instructions which will be issued. The question of the provision of refuges for persons caught in the street when a raid is imminent is under consideration; but while the equipment required in public refuges must depend on the nature of the premises employed for the purpose it is considered that if ordinary safeguards are employed the installation of filtration plant will not be required

Mr WILSON asked the Home Secretary whether the Air raid Precautions Department could state by what test in their opinion, ordinary people could detect the presence of mustard gas or lewisite without having to breathe it —Mr GEOFFREY LLOYD replied Mustard gas and lewisite can be detected by visual observation or by sense of smell, which might suffice to give warning without any harmful effect Arrangements will however be made for the detection of poison gas as part of the air raid precautions organisation and if members of the public were in danger of inhaling poisonous vapours every effort would be made to warn them of the presence of gas before they had to ascertain it for themselves

TUESDAY, MARCH 2ND

Council of College of Nursing and Industrial Nursing

Mr ROSTRON DUCKWORTH asked the Home Secretary whether he had received any memorandum indicating the policy of the council of the College of Nursing with regard to industrial nursing and to the care and health of the employees in factories, and whether, in that case, he would see what practical steps could be taken to give effect to its recommendations —Sir JOHN SIMON replied Since the question was put down I have, as no doubt have other hon Members, received a copy of a memorandum on this subject from the College of Nursing, and it will receive my careful consideration The policy of the College, of which I have been kept fully advised is to provide special training for nurses employed in industrial undertakings or wishing to take up such employment This policy has the full support of the Factory Department and both medical and other inspectors have given lectures to the nurses attending the courses

Protection against Arsenical Gas

Mr PARKER asked the Home Secretary what was the rate of rise of pressure across the filter when arsenic smokes were present in the area in a concentration of 0 6 gramme per cubic metre and were breathed through a civilian *respirator* —Mr GEOFFREY LLOYD, Under Secretary, Home Office, replied The concentration of arsenical gas mentioned in the question is extremely high and such as can only be produced in quite exceptional circumstances It is considered that such concentrations are unlikely to be encountered by the general civilian population under ordinary practical conditions, and the question as to the behaviour of the civilian respirator under these hypothetical conditions has, therefore, no practical significance

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THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Comdr G S Rutherford to *Drake* for R N B

Surg Comdr (D) S E Brown to Hosp Ship *Maine*

Surg Lt Comdrs T L Cleave and C B Nicholson to R N Hosp, Hong Kong, and T G B Crawford to *Curacoa*

Surg Lt Comdr (D) H A Ginn to *Cyclops*

Surg Lts F W Baskerville to *Wildfire*, and G H G Southwell Sander to *President* for course

Surg Lt S R G Pimm placed on Retd List at own request

Surg Lts (D) D D Craig to *Resource*, H W Gibbs to *Drake* for R N B, K E J Fletcher to *Medway*, and J C Benson to *Dorsetshire*

To be Surg Lts (D) W A Dickie, W I N Forrest, and F S Roff

Mr E H C Earl and Mr L H Terry have been appointed Admiralty Surgeons and Agents at Torquay and Goodwick, Pembrokeshire, respectively

ARMY MEDICAL SERVICES

Maj Gen T S Coates CB, OBE, KHP late R A M C retires on ret pay

Col F D G Howell DSO, MC, KHS, late R A M C, to be Maj Gen

Maj Gen Howell was gazetted to the rank on assuming the post of D D M S *at Aldershot in succession to* Maj Gen Coates who has had 34 years service and was D D M.S in the Northern Command before going to Aldershot

Lt Col J S McCombe DSO from R A M C to be Col

ROYAL ARMY MEDICAL CORPS

Maj and Bt Lt Col S Smith to be Lt Col

Short Service Commissions Lt J H Caverhill to be Capt

Lts (on prob) confirmed in their rank W N L Haynes J R Kellett K C F Mackenzie, R A Hoey, R J G Morrison, J Shields, A T Marrable, C W Maisey, W Thomson W Stewart, G B Hough J A Davidson, E A Smyth, R S Hunt, J V L Farquhar, C L Lewis, G G Smith P H Ball, E H Evans, W D Eustace, I N Fulton, N R Murdoch and W Laurie

Lt (on prob) V *Bennett is restd to the estabt*

W Laurie to be Lt (on prob)

The *following candidates* (R A M C) were successful in the examination (in written subjects) of officers with a view to promotion in the Regular Army and Indian Army which was held in India and Burma in October last: Majs D J H Jones and G W Rose, and Capts W G S Foster, L T Furnivall, and H C M Walton

REGULAR ARMY RESERVE OF OFFICERS

Maj M G Dill and Capt C Robb, having attained the age limit of liability to recall, cease to belong to the Res of Off

ARMY DENTAL CORPS

Applications are invited from dental surgeons for appointment to eight commissions in the Army Dental Corps Candidates will be selected for these commissions without undergoing competitive examination and must not be over the age of 28 Successful candidates will be *given short service commissions for six years, at the end* of which period they will retire with a gratuity of £1000 or apply for permanent commissions Full particulars and form of application may be obtained from the Director Army Dental Service, War Office, London, S W 1

Capt C C Marston having attained the age limit of liability to recall, ceases to belong to the Res of Off

Short Service Commissions Lts (on prob) confirmed in their rank C O B Stibbs, H M Barbour, and A E Allan

TERRITORIAL ARMY

Lt Col and Bt Col G J Linklater, O B E from Gen. List R A M C to be Col and is apptd A D M S, 52nd (Lowland) Div, and Col A P Watson, O B E, TD, vacates the appt on completion of tenure

Lt Col W H Kerr, from Gen List, R A.M.C, to be Col and is apptd A.D.M S, 53rd (Welsh) Div and Col F T Rees, M C, vacates the appt on completion of tenure

Maj J P J Jenkins to be Lt Col and to comd the *158th* (Welsh) *Fd Amb*

Maj C D Bruce to be Lt Col and to comd the 155th (Lowland) Fd Amb

Lt A D Davidson, from 51st (Highland) Divl Sig, to be Capt

G D Matthew to be Lt

Supernumerary for Service with O T C —Lt Col C H Carlton, M C to be Bt Col

Lt M K Braybrooke to be Capt

Lt R L Harward to be Capt

A J Webster (*late Cadet Serjt*, *George* Watson's Coll Contgt, Jun Div, O T C) to be Lt

I B Speight to be Lt

TERRITORIAL ARMY RESERVE OF OFFICERS

Maj W Baxter, from Active List to be Maj

Capt A W Henderson from Active List, to be Capt

ROYAL AIR FORCE

Group Capts R J Aherne, M C, *to* R A F General Hosp, Hinaidi, Iraq to command and T Montgomery to Headquarters, R.A F, India, *New Delhi, for* duty as Principal Medical Officer

Wing Comdr E A Lumley, M C, to Headquarters R.A F *Iraq, Hinaidi for duty as Deputy* Principal Medical Officer (Hygiene)

Flight Lt D A Wilson is promoted to the rank of Squadron Leader

Flight Lts A S Amsden and H E Bellringer to Headquarters R A.F Iraq, Hinaidi

Flying Offrs Y D Jones to No 28 (Army Coöperation) Squadron Ambala, *India* R C *O Grady to* No 5 (Army Coöperation) Squadron Chaklala India, and C C Barker and F L Whitehead to Headquarters, R A.F Iraq Hinaidi

RESERVE OF AIR FORCE OFFICERS

Flight Lt J B Murphy relinquishes his commission on completion of service

MEDICAL NEWS

University of Oxford

On Feb 27th the honorary degree of D Sc was conferred on Prof T Svedberg of Upsala After the congregation Prof Svedberg brought into use the ultra-centrifuge in the department of biochemistry and demonstrated its action. He is its inventor and maker (see *Lancet* 1936 2 874)

The degree of D.M was conferred on W H Owles and D H Brinton

Last Saturday Sir Arthur Salter was returned to Parliament at the Oxford University by-election He stood as an Independent and received 7580 votes, against 3917 given to Sir Farquhar Buzzard F R C P (Conservative) and 3608 to Prof F A. Lindemann, F.R.S (Independent Conservative)

At a congregation on Tuesday Sir Farquhar Buzzard regius professor of medicine in the University moved a decree that a special allowance of £500 a year be paid to any Nuffield professor who undertakes not to retain fees given him for attendance on patients in hospitals associated with the Nuffield scheme A professor could thus give up his fees for an annual payment and his services would be at the disposal of patients and colleagues in cases of special interest

University of Cambridge

Mr James Gray Sc.D reader in experimental zoology in the University has been appointed to the chair of zoology in succession to Prof J Stanley Gardiner F R.S who is retiring at the end of September

Royal College of Surgeons of England

The spring course of museum demonstrations at the Royal College of Surgeons has begun and to-day Friday Dr A J E Cave will give the second when he will speak on anatomy of the knee joint He will also demonstrate the anatomy of the nasal fossæ and sinuses on March 12th and of the trigeminal nerve on March 19th The remaining lectures will be given on March 8th by Dr L W Proger who will describe recent additions to the museum and on March 15th by Dr C Keith Simpson, who will speak on the pathology of the adrenal gland in relation to sudden death All the demonstrations will be given at the College Lincoln's Inn fields, W C at 3 P M and they are open to advanced students and medical practitioners

Increased Use of Milk

Sir Kingsley Wood with Lord Feversham (Parliamentary Secretary to the Ministry of Agriculture) received on Tuesday last a deputation from the National Federation of Women's Institutes, introduced by Lady Denman The object of the deputation was to bring to the notice of the Minister of Health a resolution urging the Government to take such action to reduce the retail price of milk as would operate without detriment to the producer They said their inquiries showed that owing to the high price of milk its consumption in rural districts, which was already low was decreasing and the taste for milk lessened They thought it impossible for a family to purchase the amount considered necessary for good health on the wage of an agricultural labourer Sir Kingsley Wood in reply said it was beyond question that we should as a country drink much more milk. Moreover it was important to emphasise that the milk we consumed should be safe clean and wholesome After speaking of the steps already taken to increase consumption of milk (the milk in-schools scheme ; distribution of liquid or dried milk by over 400 maternity and child welfare authorities ; the work of the National Milk Publicity Council and experiments by which the Milk Marketing Board provided milk at reduced rates in the Rhondda at Jarrow and elsewhere) he said that the far reaching recommendations made in the recent report of the Milk Reorganisation Commission were now being considered by the Government In many areas including the necessitous areas, local authorities would if Parliament approved the proposals now before it have increased resources after April next to provide milk, free of charge or at a reduced rate for mothers and young children as well as school-children

Marie Curie Hospital

Queen Mary has consented to visit this hospital on Friday March 19th to open the Helen Chambers research laboratories.

British Red Cross Society

The Queen has assumed the office of president of this society and the Duke of Gloucester has become chairman of the council in place of his brother who is now King and who becomes patron of the society

Eichholz Clinic

Sir Humphry Rolleston has accepted the chairmanship of the medical board of this clinic in succession to the late Lord Moynihan. The clinic employs a staff of blind chartered masseurs and is administered by the National Institute for the Blind

Central Association for Mental Welfare

A course for persons engaged in the training of mental defectives in occupation centres or mental hospitals will be held in London from July 5th to 24th Further information may be had from the secretary of the association 24 Buckingham Palace-road S W

Presentation to Dr Prest

On his retirement from the post of medical superintendent of Glenafton Sanatorium New Cumnock, Dr Edward Prest was presented with a silver salver from the staff and with a canteen of cutlery and a wireless set from subscribers in the county

Mental After Care Association

The annual meeting of this association will be held at the Girdlers Hall, 39 Basinghall-street London E C on Wednesday March 10th at 3 15 P M Lord Wakefield will preside and the speakers will include the Bishop of London, Dr G A Lilly Dr Isobel Wilson and Dr Reginald Worth

Margaret street Hospital London

At the annual meeting of this Marylebone hospital for diseases of the chest it was stated that the out patients have increased this year to 160 per week as compared with 144 per week last year owing largely to treatment given in the X ray clinic

British Institute of Philosophy

An address will be given by Mr N J T Needham Sc D entitled Should Our Rulers be Biologists on Tuesday March 16th at 8 15 P M at University College Gower-street London W C Prof Lancelot Hogben F R S will take the chair and cards of admission may be obtained from the director of studies at University Hall 14 Gordon-square W C 1

Royal Society of Medicine

This society's house and library will be closed from Friday March 26th to Monday March 29th both days inclusive The library will be closed at 6 30 P.M on Thursday March 25th and on Tuesday March 30th

Institute of Hospital Almoners

Dr A B Howitt M P took the chair at the annual general meeting held at the Westminster Palace Rooms on Feb 25th when Sir George Newman gave an address He had learned Sir George said the philosophy of almonry from Jeremy Bentham Edwin Chadwick Florence Nightingale Thomas Barnardo and Robert Morant Originally the hospital almoner's work was to assess collect and adjust the voluntary payments of patients, but it had now become a great educational and creative movement for it was coming to be realised that medicine must be social as well as medical and that disease was the biggest factor in industrial welfare It was clear from what was said at the meeting that the demand for almoners still exceeds the supply and there is a temptation to shorten the period of training in order to meet it but the council of the Institute is setting its face against any lowering of the standard or shortening of the period of training

Hospital Saving Association

The sum of £502,492 was paid to London hospitals last year (ending June 30th) by the association and some £58,051 to provincial hospitals These sums together with refunds amounted to £704,451

League of Nations Health Administration

Dr E J Bigwood (of the Solvay Institute of Physiology, Brussels) and Dr Hazel Stiebeling (senior food economist at the Bureau of Home Economics, Washington) will speak on nutritional work in connexion with the League of Nations on Wednesday, March 10th, at 5 P M, in the theatre of the Lister Institute of Preventive Medicine, Chelsea Bridge road, S W 1 (nearest station, Sloane square) All interested are invited to attend

Papworth Village Settlement

In the autumn of 1935 Lord Nuffield offered to give the settlement £25,000 when it had itself raised £75,000 Papworth has now managed to raise £60,000 of the total needed, and on Tuesday, April 20th, the Duke of Kent will preside over a festival dinner at Grosvenor House, when it is hoped to raise the final sum which is required to render Lord Nuffield's offer effective Tickets may be had from the London offices of the settlement, which have recently been moved to 16, Grosvenor place, S W

Births, Marriages, and Deaths

BIRTHS

DUNKERLEY —On Feb 23rd at Westerham Kent the wife of Dr Arthur H Dunkerley of a son

HARDING —On Feb 27th, at Sheffield the wife of Dr Harold E Harding of a son

HASLER.—On Feb 21st at Harman Drive N W the wife of Dr J K Hasler of a son

HEESOM —On Feb 26th, the wife of Dr Alan Heesom, Redhill, of a son

HUNTER —On Feb 22nd at Plymouth the wife of Dr T A A Hunter of a son

MARSHALL.—On Feb 21st at Southampton the wife of Dr R M Marshall of a son

MASON —On Feb 24th at Hampstead N W the wife of Mr F Courtenay Mason, F R C S of a son

MACFARLANE —On March 1st at Devonshire-place, W, the wife of Dr R G Macfarlane, of a daughter

MARRIAGES

BENNETT—STOKES —On Feb 17th at St Thomas s Cathedral Bombay Major Roland Antony Bennett R A M C M D to Constance Elizabeth Nanette Stokes Q A I.M.N.S, daughter of the late Frederick Watkin Stokes and Mrs Stokes, Sevenoaks, Kent

DEATHS

AITCHISON —On Feb 25th at Crawley, Sussex, Robert Swan Aitchison M D, F R C P Edin

BOWKER.—On Feb 20th at Cwmbran House Pontnewydd Mon, Charles Stanser Bowker L R C P L R C.S Edin L F P S Glasg Captain R A M C aged 73

COCHRANE —On Feb 26th Gilbert Cochrane, M B Glasg, M O H for Bromsgrove

CORKER —On Feb 24th, at Lexham gardens, W Major-General Thomas Martin Corker C B, M D, M.S Q U Irel LL D, Knight of Grace of St John of Jerusalem, Army Medical Service (retired)

HOWELL.—On Feb 26th at Lincoln, Colonel Harry Arthur Leonard Howell C M G L R C P & S Edin late R.A M C aged 69

JACKSON —On Feb 23rd, Sir Henry Jackson Bt M.A Camb M B Edin, of Putney Hill S W M.P Central Wandsworth

LIDDELL.—On Feb 28th at Estoril Portugal John Liddell M D Edin of Highworth Wilts formerly of Harrogate

LUMSDEN —On Feb 27th at Fleet Hants Col Philip James Lumsden M B Aberd late I M.S

MANUEL.—On Feb 22nd at Mexico City, Alec Manuel M B Lond late of Casa Amata Bordighera, aged 58

PINKERTON —On Feb 23rd at South Norwood Hill S E Robert Lachlan Pinkerton M D Glasg J P aged 71

POTTS —On Feb 27th at Leatherhead Laurence Potts M R C S Eng in his 85th year

STANSFIELD —On Feb 28th at Reading Frederic Wilson Stansfield M.D Vict, F L.S in his 83rd year

THOMAS —On Feb 25th at Westminster Hospital Arthur H L Thomas M R C.S Eng of Vincent square S W

TONGE —On Feb 23rd at Beer Devon Edward Tonge M.B E, M B Durh

WIGGINS —On Feb 26th William Denison Wiggins M R C S Eng D.P H Medical Supt, St Alfege s Hospital Greenwich

WRIGHT —On Feb 23rd at Kenton Middlesex William Gordon Wright, M R C S Eng of Accrington

N B —A fee of 7s 6d is charged for the insertion of Notices of Births Marriages and Deaths

MEDICAL APPOINTMENTS TO THE KING

TUESDAY'S *London Gazette* announces appointments newly made to His Majesty's household In the following list the sign (*) denotes that the person mentioned held the same office in the medical household of King George V, the sign (†) denotes that he held it in the household of King Edward VIII

Physicians —*†Viscount Dawson of Penn P C, G C V O, K C B, K C.M G, P R C.P, †Lord Horder, K C V O, F R C.P, Sir John Weir, K.C V O, C M G, M B (at present physician to Queen Mary's household), Sir Maurice Cassidy K C V O, C B, F R C P (formerly physician extra ordinary to the household)

Extra Physicians —Sir Farquhar Buzzard Bt K C V O, F R C P (formerly physician in ordinary), †Prof J A. Ryle, F R C.P, G F Still, F R C P, H Letheby Tidy, F R C P

Serjeant Surgeon —*†Wilfred Trotter, F R C S F R S

Surgeons —*†Sir Thomas Dunhill, K.C V O, C M G, F R A.C S, †Sir James Walton, K C V O, F R C.S Sir Lancelot Barrington Ward, K C V O, F R C S

Surgeon Oculist —†Sir Stewart Duke-Elder, F R C.S

Consulting Surgeon Oculist —†Sir William Lister, K C M G, K C V O, F R C S

Manipulative Surgeon —†Sir Morton Smart, K C V O, D S O, M D

Surgeon Dentist —C S Morris, M R C S, L.D S

Surgeon Apothecary to His Majesty and Apothecary to the Household —*†Sir Stanley Hewett, K C B, K C V O, K B E, M D

Physicians to the Household —†Arnold Stott, F R C P, Daniel T Davies, F R C P

Surgeon to the Household —A E Porritt, F R C.S

Surgeon Oculist to the Household —†Frank Juler, F R C S

Surgeon Dentist to the Household —*†F D Donovan, L D S

Surgeon Apothecary to the Household at Windsor —*†Sir Henry Martyn, K C V O, F R C S

Surgeon Apothecary to the Household at Sandringham —*†Sir Frederic Willans, K C V O, M R C S

Lieut -Colonel Leslie McCarthy is again reappointed coroner of the household at Windsor Castle

SCOTLAND

Physicians —*†John Cowan, M D, †Alex Greig Anderson, F R C P, Prof John McNee, D S O, F R C P

Extra Physicians —†Sir Robert Philip, M D, Sir Ashley Mackintosh, K C V O, F R C P E (formerly physician to the King in Scotland)

Surgeons —*†Sir John Fraser, K C V O M C, F R C S E, *†Prof J R Learmonth, F R C S E

Surgeon Oculist —*†Arthur Sinclair, F R C S E

Surgeon Dentist —*†L C Broughton Head, M B, L D S

Surgeon Apothecary to the Household at Balmoral —*†George Middleton, M.B

Surgeon Apothecary to the Household at Holyroodhouse —*†Norman Carmichael, F R C P E

ROYAL LONDON OPHTHALMIC HOSPITAL —The annual dinner of past and present students of this hospital will be held at the Langham Hotel Portland place on Thursday March 11th, at 7 30 P M Mr T Harrison Butler consulting surgeon to the Birmingham and Midland Eye Hospital, will be in the chair and Mr Charles Goulden, 89 Harley street, London W 1, is acting as hon secretary

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday and cannot appear if it reaches us later than the first post on Wednesday morning

SOCIETIES

ROYAL SOCIETY OF MEDICINE 1 Wimpole-street W

MONDAY, March 8th.

United Services. 4.30 P.M. Group Captain Struan Marshall Respiration in High Flying

TUESDAY

Therapeutics and Pharmacology 5 P.M. Prof. E. C Dodds and Dr R. L. Noble Relationship between the Pituitary and Gastric Secretion Dr Lucy Wills Extracts of Liver and Yeast: their Varying Efficiency in the Treatment of Macrocytic Anæmias.

Psychiatry 8.30 P.M. Dr J H Van der Hoop (Amsterdam) The Problem of Intuition in Medical Psychology

WEDNESDAY

Surgery Subsection of Proctology 8 15 P.M. Dr A F Hurst Melanosis Coli. Dr Hurst and Mr Gaymer Jones 1 Regional Colitis Mr L E. C. Norbury 2 Melanosis Coeci.

FRIDAY

Ophthalmology 5 P.M. Clinical Meeting at St Thomas's Hospital S.E.

Epidemiology and State Medicine 8 15 P.M. Sir Frederick Hobday The Epidemiology of Animal and Human Diseases.

MEDICAL SOCIETY OF LONDON 11 Chandos-street W

MONDAY March 8th.—8.30 P.M. Mr G R Girdlestone Effects of Prolonged Dorsal Decubitus.

ASSOCIATION OF INDUSTRIAL MEDICAL OFFICERS

FRIDAY March 12th.—4 45 P.M. (London School of Hygiene Keppel-street W C.) Business Meeting 6 P.M. Mr Eric Farmer Accident Proneness, Suggested Factory Investigations Dr F H C Heards Organised Treatment and Rehabilitation of the Injured Workman

SATURDAY —10 A.M. (Carreras Limited Hampstead road N W) Visit to Clinic and Works with Dr T O Garland.

LONDON JEWISH HOSPITAL MEDICAL SOCIETY St pney Green, E.

THURSDAY March 11th.—3 45 P.M., Miss Muriel Landau Menstruation Dr S Levy Simpson The Menopause Mr A A Davi Subject to be announced Dr A Loeser Film on the Hormonal Origin of Menstruation

SOUTH WEST LONDON MEDICAL SOCIETY

WEDNESDAY March 10th.—9 P.M. (Bolingbroke Hospital Wandsworth Common) Dr W E. Lloyd will take the chair at a Clinical Meeting

PADDINGTON MEDICAL SOCIETY

TUESDAY March 9th —9 P.M. (Paddington Tuberculosis Dispensary, 60 Talbot road W) Dr R S Walker Demonstration of Technique of Artificial Pneumothorax on Patients

WEST KENT MEDICO-CHIRURGICAL SOCIETY

FRIDAY March 12th.—8 15 P.M. (Miller General Hospital Greenwich, S.E.) Dr R R Trail Differential Diagnosis of Chest Diseases

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY

THURSDAY March 11th.—8.30 P.M. (11 Chandos street W.) Dr. Margaret Lowenfeld The Toddler and the School-child (Symposium on Mental Health in Childhood and Adolescence III)

BIOCHEMICAL SOCIETY

FRIDAY March 12th —[illegible] 30 P.M. (University College, Gower-street W C) Short Communications and Demonstration

LECTURES, ADDRESSES DEMONSTRATIONS &c

ROYAL COLLEGE OF PHYSICIANS Pall Mall East S W

TUESDAY March 9th and THURSDAY —Dr Crighton Bramwell: The Arterial Pulse in Health and Disease (Lumleian lectures.)

ROYAL COLLEGE OF SURGEONS OF ENGLAND Lincoln's Inn fields W C.

MONDAY March 8th.—5 P.M. Dr L. W Proger Recent Additions to the Museum

FRIDAY —5 P.M. Dr A J E. Cave Anatomy of Nasal Fossæ and Sinuses.

ROYAL SOCIETY OF ARTS John-street W C.

WEDNESDAY March 10th.—8 15 P.M. Dr C. S Myers F R.S: Industrial Psychology and the Modern World.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane road, W

TUESDAY March 9th —4 30 P.M. Dr Gardiner-Hill Endocrine Diseases and Disturbances

WEDNESDAY —Noon clinical and pathological conference (medical) 2 P.M., Dr Gray Pathology of Bone Diseases 3 15 P.M. clinical and pathological conference (surgical) 4 30 P.M. Miss Honor Fell D.Sc: Tissue Culture

THURSDAY.—Noon, clinical and pathological conference (obstetrics and gynæcology) 2.30 P.M. Dr Duncan White: Radiological Demonstration 3 30 P.M. Mr A K Henry: Demonstrations on the Cadaver of Surgical Exposures 3 30 P.M., Mr V B. Green Armytage: Sterility

FRIDAY —2 P.M. operative obstetrics 2.30 P.M. Prof Hey Groves: Fractures. 3 P.M., department of gynæcology pathological demonstration

Daily 10 A.M. to 4 P.M. medical clinics surgical clinics and operations obstetrical and gynæcological clinics and operations

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE Hammersmith W

MONDAY, March 8th.—10 A.M. skin clinic. 11 A.M surgical wards 2 P.M., operations surgical and gynæcological wards medical, surgical, and gynæcological clinics

TUESDAY —10 A.M medical wards 11 A.M. surgical wards. 2 P.M., operations medical, surgical, and throat clinics. 4 15 P.M. Dr Konstam Some Recent Advances in Therapeutics

WEDNESDAY —10 A.M children's ward and clinic. 11 A.M medical wards 2 P.M. gynæcological operations medical surgical and eye clinics 4 15 P.M. Dr Redvers Ironside Constitutional Symptoms in Pituitary Disease.

THURSDAY —10 A.M. neurological and gynæcological clinics. Noon, fracture clinic. 2 P.M., operations medical surgical and genito-urinary and eye clinics

FRIDAY —10 A.M., medical wards skin clinic Noon lecture on treatment. 2 P.M., operations, medical surgical, and throat clinics 4 15 P.M. Mr Vlasto The Tonsil Question

SATURDAY —10 A.M. children's and surgical clinic 11 A.M medical wards.

The lectures at 4 15 P.M. are open to all medical practitioners without fee

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION 1 Wimpole-street W

MONDAY March 8th to SATURDAY March 13th.—NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N W Tues 8 30 P.M. Mr Hamilton Bailey: Testicle and Prostate.—ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234 Great Portland-street W All-day course in orthopædics —INFANTS HOSPITAL, Vincent-square S W All-day course in infants' diseases —WEST END HOSPITAL FOR NERVOUS DISEASES Welbeck-street W Afternoon course in neurology for M R.C.P candidates —ROYAL CHEST HOSPITAL, City-road E.C Mon, Wed., and Fri 8 P.M., M.R.C P course in chest and heart diseases (open to non members) —BROMPTON HOSPITAL, S W 5 P.M. twice weekly M R C.P course in chest diseases —Unless otherwise stated courses are open only to members of the fellowship

SOUTH WEST LONDON POST-GRADUATE ASSOCIATION St. James Hospital Ouseley road S W

WEDNESDAY March 10th.—4 P.M. Dr C. M. Wilson Asthma.

HOSPITAL FOR SICK CHILDREN Great Ormond-street W C

THURSDAY March 11th —2 P.M., Dr Wilfred Pearson Urinary Antiseptics in Genito urinary Disorders 3 P.M., Mr Eric Lloyd Technique in Operations on the Knee joint

Out patient clinics daily at 10 A.M and ward visits at 2 P.M

HAMPSTEAD GENERAL AND NORTH WEST LONDON HOSPITAL N W

WEDNESDAY March 10th.—4 P.M. Dr C. J Massey Dawkins Recent Advances in Anæsthesia and their Application to General Practice.

NATIONAL HOSPITAL Queen square W C.

MONDAY March 8th —3.30 P.M. Dr Kinnier Wilson. Congenital and Heredo familial Diseases (III)

TUESDAY —3.30 P.M. Dr Grainger Stewart Epilepsy

WEDNESDAY —3.30 P.M Dr Kinnier Wilson Clinical Demonstration

THURSDAY —3.30 P.M. Dr Critchley Vascular Diseases of the Brain (IV)

FRIDAY —3.30 P.M. Dr Purdon Martin Acute Encephalitis and Myelitis

Out patient clinic daily at P.M

CENTRAL LONDON THROAT NOSE, AND EAR HOSPITAL Gray's Inn-road, W C.

FRIDAY March 12th.—4 P.M. Mr Harold Kisch Frontal Sinusitis—Diagnosis and Treatment

NATIONAL HOSPITAL FOR DISEASES OF THE HEART Westmoreland-street W

TUESDAY March 9th.—5.30 P.M. Dr T F Cotton Heart Failure and its Treatment

ST JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE, 42 Ranelagh road S W

FRIDAY March 12th.—4.30 P.M. Dr Philip Ellman Drug Therapy in the Rheumatic Diseases

MANCHESTER ROYAL INFIRMARY

TUESDAY March 9th.—4 15 P.M. Mr I R Wrigley Chronic Appendicitis.

FRIDAY —4 15 P.M. Mr A H Southam: Demonstration of Surgical Cases.

ANCOATS HOSPITAL Manchester

THURSDAY March 11th.—4 15 P.M. Mr E E. Hughes: Renal Tumours.

LEEDS GENERAL INFIRMARY

TUESDAY, March 9th.—3.30 P.M. Mr Digby Chamberlain Peptic Ulcer

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION

WEDNESDAY March 10th.—4 15 P.M. (Royal Maternity and Women's Hospital) Dr R. A. Lennie Antenatal Care.

Appointments

BRINTON, DENIS B M Oxon, M R C P Lond has been appointed Hon Assistant Physician to the Royal London Ophthalmic Hospital (Moorfields)

BUNTING, F W M.B Glasg D P H Assistant Medical Officer for Bristol

BURROWS, T E, M R C S Eng, D P M, Senior Assistant Medical Officer at the East Sussex County Mental Hospital Hellingly

COPELAND, C L, M B Liverp, D P M Deputy Medical Superintendent of the Upton Mental Hospital, Chester

COWAN, H K M D Belf, D P H, County Medical Officer of Health and School Medical Officer for Gloucestershire

CRAIG, PATIENCE M B Manch D P H, Assistant Medical Officer of Health for Newport, Mon

FLEMING, G W T H M R C S. Eng, D P M Medical Superintendent at Barnwood House Mental Hospital, Gloucester

FLIND JAMES M D Glasg, D P M Psychiatrist to the Metropolitan Hospital, London

HAM CONSTANCE, M B Brist F R C S Edin Resident Medical Officer Frenchay Park Children's Orthopædic Hospital and Sanatorium Bristol

HARVEY, C A M B Aberd D P H, Assistant County Medical Officer and Medical Officer of Health for Biggleswade

McDOWALL ANDREW M B Edin F R C.S Eng Resident Surgical Officer at Bradford Royal Infirmary

MAXWELL, R W M R C S Eng, D P M Third Assistant Medical Officer at Berrywood Mental Hospital Northampton

OFFORD H E M B Lond, D M R Registrar in the X Ray Therapy Department of University College Hospital

PRICE R E A M R C S Eng, Hon Physician to the Dermatological Department of King George Hospital Ilford (temporary appointment)

*RAMAGE GERALD M D Manch., D P H Assistant County Medical Officer of Health for Holland (Lincs)

ROBERTSON, G S M B Glasg, Medical Superintendent Calderstone Institution Whalley near Blackburn

WILLIAMSON ROBERT M R C S Eng Resident Medical Officer at Atkinson Morley's Convalescent Hospital Wimbledon

Certifying Surgeons under the Factory and Workshop Acts Dr T J T WILMOT (Louth District Lincoln), Dr A J Rae (Bromsgrove District, Worcester) Dr H CAMERON (Cranbrook District Kent)

* Subject to confirmation

Vacancies

For further information refer to the advertisement columns

Acton Hosp, W —Cas O, at rate of £150
Barbados—Chief M O, £1000
Barnsley, Beckett Hosp and Dispensary—Jun H S £200
Barnstaple North Devon Infirmary—Res M O at rate of £150
Barrow-in Furness County Borough—Asst. M O H and Asst School M O, £500
Bath Royal United Hosp—H S to Ear Nose and Throat Dept at rate of £150
Beckenham, Bethlem Hosp Monks Orchard—Two Res H P 's, each at rate of £150
Birmingham Selly Oak Hosp—Jun M O at rate of £200
Blackburn Queen's Park Hosp and Institution—Res Jun Asst M O, at rate of £150–£200
Blackburn Royal Infirmary—Res Surg O £250
Bolton Royal Infirmary—Asst Res Surg O £200
Bradford Children's Hosp—H.S, £100
Bradford Royal Eye and Ear Hosp—H.S, £180
Brighton, New Sussex Hosp for Women—H S, £100
Brighton, Royal Sussex County Hosp—Cas H.S £120
British Postgraduate Medical School Ducane road W—Cas O, at rate of £150
Burnley, Victoria Hosp—H S at rate of £150
Burton-on Trent General Infirmary—H S, £150
Buxton Devonshire Royal Hosp—H P at rate of £150–£175
Canterbury, Kent and Canterbury Hosp—H.S at rate of £125
Colonial Medical Service—Thirty Vacancies £600–£700
Connaught Hosp, Walthamstow E—Med Reg and Cas O at rate of £150 and £100 respectively
Dover Borough—Temp Asst M O H £600
Durham County Hosp—H S at rate of £150
Durham Richard Murray Hosp Blackhill—H.S £200
Ealing King Edward Memorial Hosp—Jun Res M O at rate of £150
Elizabeth Garrett Anderson Hosp Euston road N W—Hon Psychiatrist
Evelina Hosp for Sick Children Southwark, S E—H.S at rate of £120
Exeter Royal Devon and Exeter Hosp—H S to Ear Nose and Throat Dept at rate of £150
Gloucestershire Royal Infirmary—H S to Ear Nose and throat Dept at rate of £150
Guildford, Royal Surrey County Hosp—H.S at rate of £150
Halifax Royal Infirmary—Second H S at rate of £175
Harefield County Sanatorium—Physician £1000
Harrogate Royal Bath Hosp—Res M O £150
Herefordshire General Hosp—H S and Cas O £100
Holland (Lincs) County Council—Asst M O H £600
Hosp for Sick Children Great Ormond street W C—Res H P and Res H.S. each at rate of £100
Hull Royal Infirmary—H.S to Ophth and Ear Nose and Throat Dept. at rate of £150
Ilford King George Hosp—H.P at rate of £100
Ipswich County Borough—M O.H., £1000
Lancaster County Mental Hosp—Asst M O £500
Lancaster Royal Infirmary—Two Jun H S's each at rate of £130
Leeds Hosp for Women—Hon Anæsthetist
Leicestershire County Council—Asst County M O H, £600
Leigh Infirmary Lancashire.—Sen and Jun Res H S's, at rate of £250 and £150 respectively
Liverpool Royal Infirmary—Jun Cas O and H.S to Skin Dept at rate of £60
Liverpool Sanatorium Delamere Forest, Frodsham—Sen Asst to Med Supt, £325
Liverpool University, Faculty of Medicine—Sen Lecturer £600
London County Council—Two Res Med Supts, £1300 and £1100 Asst M O 's (Grades I and II) each £350 and £400 also Temp Dist M O for Area V £150
London Homœopathic Hosp Great Ormond street W C—H P, at rate of £200
London Hosp E—First Asst to Neuro surgical Dept
Lowestoft Borough and Port Sanitary District—M O H and School M O £900
Manchester Ancoats Hosp—H.S at rate of £100
Manchester Booth Hall Hosp for Children—Deputy Med Supt., £550
Manchester Ear Hosp—R S O Hosp registered for D L.O Salary £120 per annum
Manchester Royal Eye Hosp—Jun H S, £120
Manchester St Mary's Hosps—Four H.S's each at rate of £[illegible]
Margate and District General Hosp—Res M O £150
Nelson Hosp Merton S W—Res H S at rate of £100
Newcastle General Hosp—H S at rate of £150
Newcastle upon Tyne, Royal Victoria Infirmary—Jun Surg Reg £150
Northampton General Hosp—H.P, H S's and Cas O, each at rate of £150
Norwich City—District M O £175
Norwich, Norfolk and Norwich Hosp—H S to Spec Depts £120–£160
Nottingham City—Res Med Supt for City Hospital and M O for City Institution £1000 Also Asst. M O for Maternity and Child Welfare Work, £500
Nottingham General Hosp—H.S and H P, each at rate of £150
Oldham Royal Infirmary—Cas O and H.S for Fracture Dept., at rate of £175
Plymouth City General Hosp—Jun Asst M O at rate of £250
Preston and County of Lancaster Royal Infirmary—H.S to Eye, Ear Nose and Throat Dept at rate of £150
Preston Biddulph Grange Orthopædic Hosp—Jun H S at rate of £200
Princess Elizabeth of York Hosp for Children, Shadwell E—H P, at rate of £125
Princess Louise Kensington Hosp for Children St Quintin avenue W—Hon Radiologist Also H P at rate of £120–£150
Reading Royal Berkshire Hosp—H S Cas O, and H.S to Spec Depts each at rate of £125
Royal Cancer Hosp Fulham road S W—H.S and H.S to Radium Dept each at rate of £100
Royal College of Surgeons of England—Examiners
Royal National Orthopædic Hospital 234 Great Portland street, W—Two H.S's each at rate of £150
Royal Northern Hosp Holloway N—Surg Reg, £300 H.S. at rate of £170 Also Consulting Physicist
St John's Hospital Lewisham, S E—Hon Asst Surgeon Hon Asst Ophth Surgeon Also Hon Dermatologist
St Mary's Hosp for Women and Children Plaistow, E—Hon Asst Gynæcologist
St Peter's Hosp for Stone &c. Henrietta street W C—H.S, at rate of £75
Salford Royal Hosp—H P, two H S's and Cas H.S, each at rate of £125
Sheffield City—Police Surgeon £1000
Sheffield Jessop Hosp for Women—H S at rate of £100
South London Hosp for Women Clapham Common S W—Sen Clin Asst for Med Out patients
Stafford Staffordshire General Infirmary—H.S, £200
Staffordshire County Council—Second Asst Bacteriologist and Pathologist £700
Stoke-on Trent Burslem Haywood and Tunstall War Memorial Hosp—Res H P, at rate of £150
Surrey County Council—Asst M O £600
Swansea County Borough Mental Hospital—Deputy Med Supt., £525
Swansea General and Eye Hosp—H P at rate of £150
University of London—S A Courtauld Chair of Anatomy £1000
Walsall General Hosp—H S at rate of £150
Warrington Infirmary and Dispensary—Second and Third Residents at rate of £175 and £150 respectively
Weir Hosp Grove road Balham S W—Jun Res M O £150
West Bromwich and District General Hosp—H.S H P and Cas H S each at rate of £200
West London Hosp, Hammersmith W—H P and two H.S's each at rate of £100
Westminster Hosp Broad Sanctuary, S W—Asst Med Reg, at rate of £100
Wimbledon Hosp Thurstan road S W—Res M O at rate of £150
Worthing Hosp—H S and H P each at rate of £130
Wrexham and East Denbighshire War Memorial Hosp—Two Res H S's each at rate of £150

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Swinton (Lancashire) Sudbury (Suffolk) Chertsey (Surrey) and Staveley (Derbyshire)

Medical Referee under the Workmen's Compensation Act 1925 for the Oban Sheriff Court District (Sheriffdom of Argyll) Applications should be addressed to the Private Secretary Scottish Office Whitehall London S W 1, before March 24th

NOTES, COMMENTS, AND ABSTRACTS

THE SAILOR LOOKS AT THE SURGEON

In an address delivered at the Royal Naval Hospital Chatham, last November and published in the January issue of the *Journal of the Royal Naval Medical Service* Admiral Sir Edward Evans expressed admiration of the surgeons whom he has known and of the profession as a whole He referred to Edward Wilson whose name is a revered memory and whose knowledge of food values enabled us to get the best possible sledging rations for that long eighteen hundred mile sledge journey to the South Pole and back. Wilson was known to the expedition as Uncle Bill or The Peacemaker and Admiral Evans ended his tribute by quoting Scott's very moving letter to Mrs Wilson in which Scott says of Wilson he died as he lived a brave true man—the best of comrades and the staunchest of friends—an enviable epitaph indeed In the second part of his address Admiral Evans dealt with the medical aspect of polar exploration from the point of view of a sailor-explorer Exploring is an occupation for youngish men from 27 to 35 seems to be the best all round age though the leader may be older Men over 25 seem to stand the long sledge journeys better than their juniors In selecting personnel the medical officer may be invaluable Temperament as well as physique must be considered and Wilson with the help of Murray Levick and Atkinson examined nearly 8000 volunteers for the Scott expedition Provisions on board the ship or at the main base can obviously be more lavish than sledging rations which on the Scott expedition consisted of 34 4 oz. daily for each man made up of 16 oz of biscuit 12 oz. of pemmican 2 oz. each of butter sugar and eating chocolate and 0·4 oz. of tea and cocoa Sometimes this ration was supplemented by fresh pony meat but a surfeit of this was apt to cause dysentery Lice are mercifully unknown in the Antarctic—a matter for thankfulness when clothes can only be washed at the winter quarters and when it may be necessary to go as long as 150 days without washing shaving cutting the hair or cleaning the teeth Apart from frost bite and snow blindness chafe a seemingly minor disability may become a major handicap Admiral Evans himself fell a victim to scurvy which started with stiffening of the knee-joints so that he was unable to straighten his legs. Nevertheless he managed to stagger along for over 100 miles in this sorry plight till he finally fainted and dropped in his tracks on the ice. Thanks to the devotion of his companions he was rescued and treated so successfully that less than a year later he was fit enough to take command of the expedition on Scott's death. In comparing the great explorers he has known who continued to strive to seek to find and not to yield with the medical profession *Admiral Evans paid it the highest compliment*

MEDICAL TREATMENT OF HEPATITIS AND CHOLECYSTITIS

Dr Adam Moss (West Kirby) writes: In the report of the discussion at the Liverpool Medical Institution given in The Lancet of Feb 20th I find no mention of the treatment of hepatitis and cholecystitis with vaccines Twenty years ago I saw a young lady who suffered from frequent attacks of jaundice and fever She had been seen by physicians in Manchester and Liverpool the burden of whose treatment was hexamine; which was given without effect. It struck me that the condition might be due to *an infection of the gall bladder and that a* vaccine might prove useful As I did not know what the particular organism was I injected ten minims of Parke Davis's Mixed Infection Phylacogen weekly for about 18 doses The result was a complete cure and since then I have treated all these cases in the same way and with almost complete success. A few years ago Sir David Wilkie published a paper in which he said that for the five preceding years he had sent all excised gall bladders to the laboratory for culture No organisms were found inside the gall bladder but in 75 per cent. the hæmolytic streptococcus was found in the wall He concluded by saying: "I do not know of any drug which is likely to reach this, perhaps a vaccine would. I then found that the toxin of the hæmolytic streptococcus was one of the nine contained in the phylacogen.

FREE CONVALESCENT HOMES

Doctors who have worked through the recent influenza epidemic will undoubtedly have met with patients who would be greatly benefited by a period of convalescence away from their own homes but who are prevented from going away by lack of means It cannot be widely enough known that the Metropolitan Convalescent Institution exists to meet the needs of such patients The Institution has homes for both sexes at Walton near Weybridge, and Bexhill-on-Sea, and a home for children at Broadstairs Much has recently been done to bring the buildings up to date and more is contemplated as soon as funds permit It should be emphasised that no charge whatsoever is made to the patients who are admitted by subscribers letters and who receive concessions in the matter of railway fares. Further information may be had from the *secretary* at 14 Victoria-street London S W 1

COLOUR BLINDNESS AND HÆMOPHILIA

Since colour-blindness and hæmophilia are sex linked characters, the genes responsible for these defects should be carried in the same chromosomes and should show also partial linkage with one another Such a relation was demonstrated by Dr Julia Bell and Prof J B S Haldane F R S before the Royal Society on Feb 25th in three of six families having both conditions. In these three all the hæmophilics were also colour-blind while without exception their non hæmophilic brothers had normal vision Though in another family the linkage was doubtful for two brothers were colour-blind but only one had hæmophilia in the two remaining families it was the non hæmophilics that were colour blind This was attributed to crossing-over of the genes It was calculated from the frequency of crossing-over and of colour-blindness in the male population that the probability was very remote that sampling had caused the association attributed to linkage Dr Bell and Prof Haldane also obtained further evidence for the view that hæmophilia originates by mutation

ADVICE ON CHILDREN

The number of books now being issued by doctors on the upbringing of children seems to be interminable A recent addition [1] is one of a series in which Commonsense figures prominently in every title It is perhaps unfortunate that Dr Scott had confused common sense with chattiness In a prefatory bed time story all children are told to chew each bite thirty two times or more which alone should be enough to frighten off the average parent who already finds children's meal times tedious enough A chapter devoted to the dangers of poisoning by deadly night shade berries on the other hand will hardly frighten doctors for few of them have heard of a case of this form of poisoning except from their old nannies In brief the book is not (as Dr Scott would say) our cup of tea A smaller book,[2] which has an attractive frontispiece is sponsored by the Associa tion of Maternity and Child Welfare Centres Dr Gibbens is clearly attempting to deal with those problems on which the inexperienced parent needs advice, and if his views on such matters as child psychology are a trifle over-simplified and didactic, no great harm is done We hope those wicked women who provide candied fruits and all manner of indigestible foods at children's parties, at whom Dr Gibbens shakes such a terrifying fist, will be suitably humiliated. The book contains a surprising amount of information in small compass and deserves success

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[1] Your Child's Health: A Commonsense Guide By Douglas Hay Scott M B, Ch.B London: Frederick Muller Ltd 1936 Pp 94 5s

[2] The Care of Children from One to Five Years. By John Gibbens M A M.B M.R C P Physician in Charge of the Children's Department St John's Hospital Lewisham Medical Officer to the Babies Club Chelsea London Association of Maternity and Child Welfare Centres 1936 Pp. 16 1s 6d

A BEDSIDE BOOK

THE bedrooms of many conscientious buyers of "bedside" books must nowadays be so congested as to resemble public libraries, but the tired doctor might do worse than add to his collection a small book [1] in which Dr Christopher Howard has set down his observations on some of the things encountered in the course of his work or read of during his leisure Since his thoughts on any given theme occupy often less than a page of the book, it is not to be expected that they will always be very profound nor that his judgments will be particularly searching Nevertheless, what he has to say is said with freshness and often with humour When, in discussing modern methods of anæsthesia in childbirth, he says that "there are now women who do absolutely nothing for themselves except pass their own water" and that "it is doubtful if they would even do this were not repeated catheterisation a dangerous and a painful proceeding," it is to be hoped that he is talking only of parturient women. Dr Howard's likes and dislikes are positive enough Thus he approves of good food and drink and good cigars, whereas for contraception he has nothing but contempt Dip into it where he will, the medical reader will find something to amuse him in this little book and little or nothing to irritate him

A USEFUL MAGNIFIER

WE have received from Messrs C Baker (244, High Holborn, London, W C 1) a new form of magnifier which should be found useful in laboratory work of many kinds It consists of a four inch convex meniscus mounted on a tripod with legs about 2½ in long, which can be extended or unscrewed for packing flat The lens gives a magnification of about 2½ times and has a flat field remarkably free from distortion The tripod is wide enough to stand over a Petri dish, and there can be few bench occupations for which such a magnifier would not be helpful More than that, it would be useful on the desk of any doctor, whose own crystalline lens is beginning to harden, for reading difficult print or small writing The mount is a brass casting, heavily crystallined, and well adapted to withstand wear and tear The price is 17*s* 6*d*

OBSTETRICAL NARCOSIS WITH EVIPAN

AT a meeting of the Danish Association for Gynæcology and Obstetrics last year, Dr Ekkert Petersen gave an account of his experiences with Evipan in 100 consecutive confinements from the beginning of 1935 to the middle of October of the same year Since then his experience in this field has grown considerably, but his analysis concerns his first 100 cases (*Hospitalstidende,* Dec 8th, 1936, p 19) There were 72 primiparæ and as a rule the duration of the narcosis was from 20–25 minutes The proper timing of an injection was easiest in primiparæ When it had been given too early, and the narcosis began to fail before the birth of the child, the original injection could be supplemented by another, smaller injection without any risk. The action of the evipan was prompt, and in only one case was pain complained of at the time of the child's birth, some 15 minutes after the injection In most cases the narcosis continued for a little while after the child's birth, occasionally till after the delivery of the placenta In the 10 cases in which tears of the perineum occurred—they were all small—the practice was adopted of suturing the wound before the delivery of the placenta in order to exploit what was left of the narcosis Petersen has studied his material with special reference to certain features such as the labour pains and the amount of post-partum hæmorrhage With regard to the former, both labour pains and abdominal pressure were satisfactorily maintained, only the first and occasionally the second labour pain following the injection being weakened As for post-partum hæmorrhage and atony of the uterus, they seem to have been less than what is expected as a sequel to obstetrical chloroform narcosis Only in one case was there retention of the placenta requiring Credé's manœuvre In no case was aceton uria observed None of the infants showed asphyxia or apnœa In the comparison Petersen draws between obstetrical chloroform and evipan narcosis, his verdict is in favour of the latter

NAVAL COOKERY

TIME was when the sea-cook was referred to derisively as "slushy" and to be called the son of a sea-cook signified contempt The "Manual of Naval Cookery" now issued by H M Stationery Office at 3*s* 6*d*, proves that the status of sea-cooks has risen, and no modern sea cook's child need be ashamed of his origin. This manual, 200 pages long, is a mine of information and includes chapters on spices, invalid cookery, breadmaking, on cooking in small quantities, and on cooking for a general mess Whatever ichthyologists may say, it seems that, culinarily speaking, there are only three kinds of fish the oily, the white, and the shell The description of fresh fish almost sings itself "The eyes are full and bright, the gills are a clear bright red" Stale fish, on the other hand, "are soft, the eyes are sunk in the sockets, their flesh pits on the slightest pressure, and is easily torn from the backbone" Clearly, the crier of stinking fish must expect short shrift from the sea-cook familiar with these physical signs Eight pages are devoted to sauces, ten variations on the theme of White Standard Sauce are described and four on the Brown Standard, one of which, Devil Sauce, made by adding French mustard, Worcester sauce, and Cayenne pepper, should tickle the most jaded palate So excellent a book might find an honoured place in other places besides the galleys of H M ships

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TREATMENT OF STREPTOCOCCAL INFECTIONS —Referring to an annotation on p 525 of last week's issue of THE LANCET, Messrs Pharmaceutical Specialities (May and Baker) Ltd point out that their antistreptococcal remedy Proseptasine differs from the preparations of *p* aminobenzenesulphonamide which we mentioned, since it is the benzyl derivative (*p*-benzylaminobenzenesulphonamide) and in their experience is less toxic

DISFIGUREMENT BY VACCINATION —Major R F C AUSTIN, R A M C, retd, writes "I have been asked by a young Oxford undergraduate to remove what he considers the disfiguring marks of three vaccinations performed in his childhood Could any fellow practitioner tell me of a safe method of doing this?"

HORNSEY WELFARE CENTRE —Sir Arthur MacNalty, the chief medical officer of the Ministry of Health, opened a new maternity and child welfare centre at Hornsey on March 1st The reduction of infant mortality he said gave ground for hope that a corresponding advance might be made in protecting children in the next important stage of life—the "toddler" stage He emphasised the value of continuity of medical supervision before and after school age was reached, and the need for coöperation between the maternity and child welfare service and the school medical service

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[1] Physic and Fancy By Christopher Howard London Hutchinson and Co Ltd Pp 155 6*s*

ADDRESSES AND ORIGINAL ARTICLES

THE TREATMENT OF ACUTE RHEUMATISM IN CHILDHOOD *

BY REGINALD LIGHTWOOD M.D F.R.C.P Lond.

ASSISTANT PHYSICIAN FOR DISEASES OF CHILDREN AT THE WESTMINSTER HOSPITAL; AND PHYSICIAN TO OUT PATIENTS AT THE HOSPITAL FOR SICK CHILDREN GREAT ORMOND-STREET LONDON

EXCEPT for the passing fads and phases familiar in all diseases whose treatment is difficult, the therapeutics of acute rheumatism cannot be said to have undergone, for many years any fundamental changes True it is that there is less enthusiasm for the salicylate compounds than was the case at the beginning of the century yet these drugs are still employed and it is also a fact that nowadays we insist upon long periods of complete rest in rheumatic fever chorea, and carditis yet the importance of rest has been known for many decades Perhaps the main changes in our attitude lie in an altered emphasis placed upon the various therapeutic measures a growing awareness of public health to the importance of juvenile rheumatism as a national problem and the organisation of large-scale treatment at considerable outlay by public bodies Apart from further developments along these lines can we expect any great changes or big advances while knowledge of the ætiology of acute rheumatism remains in a state of flux?

Ætiology

Thirty years ago the streptococcal causation of rheumatism was advanced, and in the succeeding years the principal claims put forward by Poynton and Paine have been gradually consolidated not without modification but even to day not all would care to say that streptococcal infection is the basic cause of rheumatic fever Fewer observers are convinced that any particular type of streptococcus is to blame and fewer still can attempt to explain the mechanism by which a streptococcal infection may be followed in one person by recovery in another by rheumatism in a third by chorea, and in a fourth by the apparently unrelated condition of hæmorrhagic nephritis

Of recent years there has been an increasing agreement that there are three phases in an attack of acute rheumatism. The first consists in the manifestations of a more or less acute throat infection the second phase is a latent period of apparent recovery while the third comprises one or more of the following arthritis chorea carditis nodules and rheumatic erythema The symptom free interval of the second phase was recognised by Haig Brown (1886) half a century ago but his important observation remained in temporary eclipse until Schlesinger (1930) and other workers began to draw attention to it As Schlesinger Sheldon (1931) and Coburn (1936) have been pointing out an understanding of the changes taking place during the silent interval would certainly teach us much of the mechanism which determines the occurrence and severity of the rheumatic attack. In this direction the work of Coburn is particularly stimulating for he has begun to analyse the way in which the immunological changes which follow a streptococcal infection vary in different individuals and to ascertain what special differences are to be noted in rheumatic subjects From his work it emerges that rheumatic children handle a streptococcal throat infection in a manner different from other persons and there is hope that the time may come when we may be enabled to make a rational attempt to correct the abnormal reaction of the rheumatic subject to the streptococcal infection

Without doubt the streptococcal hypothesis is the favourite, but once again a rival has entered the field. Amies and Signy have looked for and found elementary bodies in pericardial exudates obtained from patients suffering with acute rheumatism they have attempted in collaboration with Schlesinger (1935) to show their specificity by agglutination reactions in the serum of rheumatic subjects. If and when this work is confirmed the hypothesis of acute rheumatism as a virus disease (Schlesinger Signy and Payne 1935) will require careful and critical investigation.

Treatment

PREVENTION

Under these circumstances we cannot expect radical changes in treatment until a further lead is given by bacteriology Yet there are certain relatively new observations to encourage us that further progress can be made by the clinician and by the public authorities without waiting for bacterial confirmation of the ætiological hypotheses Now that it has been shown beyond reasonable doubt that the usual sequence of events consists of the three phases —namely throat infection latent period and rheumatic attack—we are in a better position to be on the look out for danger signals and to anticipate the onset of rheumatic disease. It is up to the clinician to make practical use of this knowledge. It is probably correct to infer that without tonsillitis or pharyngitis there would be little if any rheumatism. Thus our first problem is to prevent throat infections in rheumatic children and to this end we ought, I believe to increase our vigilance in the early recognition of tonsillitis in children's hospitals and in convalescent homes where rheumatic patients are undergoing treatment. Curiously enough the most severe attacks of rheumatism are generally preceded by relatively mild tonsillitis so that the transient character of the sore-throat and the small rise in temperature not infrequently cause it to be overlooked and to pass untreated. Sufficient isolation rooms ought to be provided so that every case of tonsillitis among rheumatic children can be separated and, in rheumatic units the beds ought to be well spaced, rather on the lines adopted in isolation hospitals Without these measures we cannot expect to prevent the occurrence of epidemic sore-throat.

[illegible]

The next point concerns the treatment of tonsillitis and pharyngitis [illegible] recurrent infection during convalescence from rheumatism Though I have no experimental or [illegible] evidence for it I believe that the moment when we can do most for the rheumatic child is the time when he is undergoing his acute throat infection. It is I find, particularly [illegible] need in hospital practice that thorough treatment [illegible] the acute tonsillitis is not always carried out [illegible] adequate purpose gargles are probably valueless, and [illegible] the [illegible] or painting the tonsils with [illegible] of protargol [illegible] in giving potassium chlorate [illegible] mouth; rest in bed is essential and [illegible]

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* Contribution to a discussion at the Harveian Society on Dec 11th 1936

not be resumed until the pulse rate and sedimentation-rate are once again normal.

A series of battles have been waged, without very conclusive results, concerning the question of tonsillectomy Statistics have been used to lend force to the arguments on each side To the unbiased onlooker it would seem fairly certain from the figures that tonsillectomy does not protect against rheumatism, nor indeed would a reasonable clinician expect it to do so, for pharyngitis can lead to rheumatism almost as easily as tonsillitis Nevertheless, clinical experience suggests to me that a complete tonsillectomy lessens the number of throat infections and may, therefore, be expected to be a help in suitably picked cases Certainly we ought not to advise the removal of normal tonsils from any child, even a rheumatic one The position now adopted by the experienced clinician can be summed up as follows in a rheumatic child the question of tonsillectomy should depend upon the ordinary criteria which we apply to any other child, if the tonsils are irrevocably infected they should come out, the tonsillar glands and a history of sore throats are our best guides

Modern Methods

REGIMEN

Let us now ask ourselves what are the main points in modern treatment of acute rheumatism and rheumatic carditis, and how do recent observations help us? In hospital units organised for the work of treating rheumatic children, arrangements are made that every patient showing any evidence of rheumatic "activity" is nursed almost flat with but one pillow, is allowed no active movement except of the hands, and is fed by a nurse so that the work of the heart is reduced to a minimum Together with this régime of complete rest some clinicians choose to employ drugs, but of those at present available none is of primary importance When all signs of rheumatic "activity" have passed, a gradual return to ordinary life is permitted For convenience and to guide the nursing staff, a routine schedule may be drawn up

GRADE 1 —Patient nursed lying down, one pillow, fed by nurse

GRADE 2 —Two pillows, semi recumbent, allowed to feed himself

GRADE 3 —Sitting in bed

GRADE 4 —Dressed and allowed on a couch, later walking a few steps

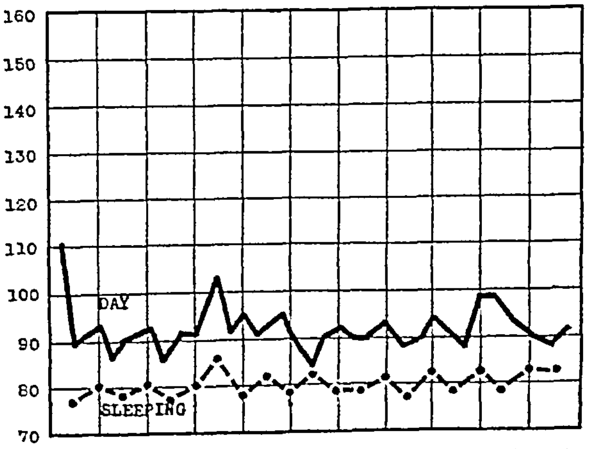

FIG 1.—The normal relation of sleeping and day pulse rates in a child

GRADE 5 —Up half the day

GRADE 6 —Up all day

A similar régime can be employed in a private house provided suitable nursing is available

The definition of rheumatic "activity" is not an easy one, and in some patients it is more difficult than in others Too many doctors make the mistake of relying on the temperature, whereas in fact, the clinical thermometer is not a great help when once the beginning of the acute attack is past, and fever cannot be described as at all constant during the course of rheumatic carditis On the other hand, of real value are careful charting of the pulse rate and weekly estimation of the sedimentation rate (Landau 1933, Payne and Schlesinger 1935) Until the sleeping pulse rate is slow, and the normal relation between it and the day pulse rate is resumed, and until the sedimentation rate is normal on more than one occasion, we ought not to allow the rheumatic subject to be promoted from Grade 1 to Grade 2 (Figs 1, 2, and 3) In patients with uncomplicated rheumatism this promotion can often be allowed after two or three weeks in the slighter cases, and after three to five weeks in ones of moderate severity But when we are dealing with carditis, two or three months is commonly necessary and sometimes many months of complete rest are required When once the stage of "activity" is passed and our patient has been promoted to Grade 2, subsequent promotions are allowed at fairly short intervals, but each patient must be treated individually

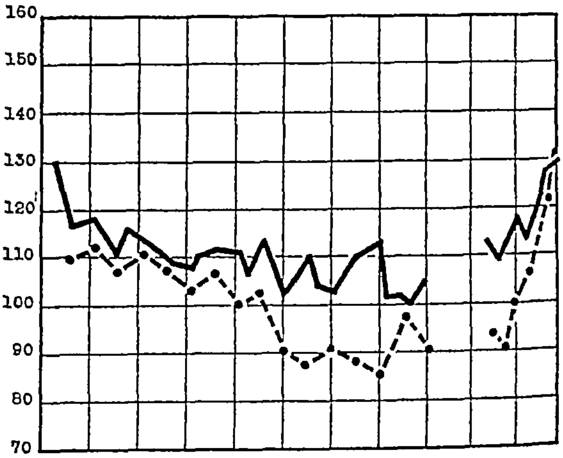

FIG 2 —Sleeping and day pulse rates in a case of rheumatic carditis showing clinical improvement and then after an interval a relapse (on extreme right)

If an intercurrent attack of tonsillitis or pharyngitis supervenes, an exacerbation of rheumatism or of carditis must be feared and a return to Grade 1 is indicated. The use of aspirin to be given during the "silent" period has been suggested as a prophylactic measure, this suggestion being based on the analogy of its effects when used in large doses in animals subject to risks of anaphylaxis It has not yet been proved clinically to be of definite prophylactic value in the silent period.

DRUGS

Many drugs have been used with the object of checking the rheumatic infection and limiting its damage None has emerged triumphant The latest addition to our therapeutic armamentarium is calcium aspirin It is difficult as yet to be convinced that the length of treatment can be reduced by

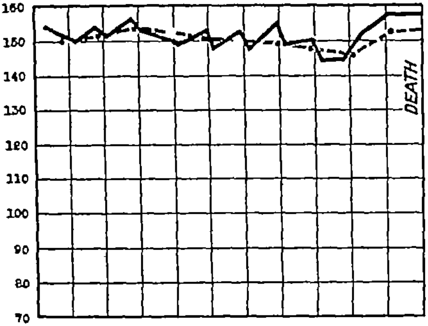

FIG 3—A fatal case of severe pancarditis, showing no interval between the rapid pulse-rates.

using this or any drug The salicylate compounds and aspirin itself are chiefly of value in alleviating the pain experienced at the onset of acute rheumatism.

Conclusion

When the present position has been explored it has to be admitted that we have a very long way to go before we can afford to be complacent in regard to our great problem of treating rheumatism in children. The picture presented by a child who has a slowly progressive rheumatic carditis is one of the most discouraging that the physician has to face If we are honest we must admit to ourselves that, like a fireman with too short a hose we cannot extinguish a smouldering fire licking the edge of the valuables in a locked house whose exterior shows curiously little signs of the damage and danger within for we can do little more than hope that the fire will burn itself out

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NITROUS OXIDE ANALGESIA IN OBSTETRICS

A NEW TYPE OF MACHINE FOR SELF ADMINISTRATION OF GAS

By Chassar Moir M D F R C S Edin. F C O G
READER IN OBSTETRICS UNIVERSITY OF LONDON AT THE BRITISH POSTGRADUATE MEDICAL SCHOOL

During recent years much attention has been given to the use of nitrous oxide gas as a means of lessening the severity of the pains of labour With the introduction of automatic apparatus a patient is now able to administer to herself a mixture of gas and air and thus produce a temporary analgesia with each recurrence of a uterine contraction There are two outstanding advantages in this method of treatment: nitrous oxide correctly diluted with air or oxygen is without danger to mother or fœtus and its use does not lessen the frequency or strength of the uterine contractions. On the other hand this type of analgesia falls short of the ideal for the reason that the relief of pain conferred by the intermittent inhalations is often imperfect, and not infrequently so inadequate that the patient has no wish to continue with the treatment

It is the object of this paper to discuss the reasons for unsatisfactory analgesia and to suggest methods by which the results may be improved.

INDIVIDUAL VARIATIONS IN RESPONSE TO NITROUS OXIDE

Before dealing with methods of inducing analgesia with nitrous oxide it may be well to point out that individual patients vary greatly in their response to small doses of the gas This variation is very evident when the gas is used to produce anæsthesia for dental extractions It is not uncommon to find that one patient after inhalation of a small quantity of nitrous oxide will show a deep and comparatively long sustained anæsthesia while another patient after inhalation of a far greater quantity of gas will still be imperfectly anæsthetised and will recover consciousness in a very short space of time

Similar variations of response to nitrous oxide are only to be expected when intermittent inhalations of the gas are given during labour and unfortunately a small proportion of women are so resistant to its influence that it is well nigh impossible for them to obtain a satisfactory analgesia by its use This fact restricts the usefulness of all nitrous oxide machines of the automatic type In order to be safe such machines must necessarily limit the quantity of gas supplied to the patient and not infrequently the restricted amount of nitrous oxide is insufficient to produce an appreciable relief of pain. Should a patient be found to belong to this refractory class it is both useless and unkind to continue with this form of analgesia: a more concentrated nitrous oxide oxygen mixture should be given by an anæsthetist, or alternatively other analgesic agents should be employed.

MACHINES INTENDED FOR SELF ADMINISTRATION OF GAS

The credit for developing a practical form of automatic nitrous oxide machine for the self induction of analgesia goes to Minnitt (1934) who introduced the apparatus now known by his name This machine is adjusted to deliver a fixed concentration of nitrous oxide gas By experiment it was found that 35 per cent. of gas diluted with air is usually capable of inducing analgesia while at the same time avoiding a dangerous cyanosis This machine and others of similar type are now widely used in midwifery practice in this country and have been favourably reported on by various workers and notably by the committee appointed by the British College of Obstetricians and Gynæcologists to investigate the use of analgesic agents in midwifery

This type of apparatus does not however, give uniformly successful results and many obstetricians have been disappointed by the meagre benefits which it confers It has been my experience that while a few patients experience an analgesic effect and are grateful for the relief obtained many others find that the severity of the pains is unaltered. Similar results have been obtained with different machines thus excluding the possibility that the lack of effect was due to defective apparatus

A COMMON CAUSE OF INEFFICIENT ANALGESIA

Observation of patients in labour has convinced me that a common cause of inefficient analgesia is the inability of many women to inhale an adequate amount of nitrous oxide before the full force of a uterine contraction is upon them To keep a mask firmly applied to the face during rest intervals requires a determination which few patients possess, and there are other reasons—of which expense is one—which make it undesirable for the patient to be kept continuously under the influence of the gas throughout her labour In practice, therefore, inhalation of nitrous oxide is always intermittent, and a patient cannot be expected to use the gas machine until there is a warning sensation of a renewed uterine contraction From that moment only 10 or 15 seconds are available in which the gas may be inhaled before the pain becomes distressingly severe Further inhalations demand great self control, and are indeed almost impossible during the second stage of labour for the reason that the patient now has an irresistible urge to "bear down" For the great majority of patients the degree of analgesia is, therefore, determined by the amount of gas which can be inhaled during the short period of 15 seconds which precedes the climax of each pain.

EXPERIMENTAL OBSERVATIONS

To gain information regarding the effect of such short administrations of nitrous oxide, experiments were performed in order to observe and to record the sensations experienced when the gas is inhaled in the manner adopted by the patient in labour These observations were made by myself and by volunteers

Measurement of the analgesic effect of nitrous oxide presents great difficulties and has not been attempted It is, however, a simple matter to observe the characteristic "dizzy" or "light" sensation which is induced by the gas, and to use this as a measure of the efficiency of the various methods of administration The time of onset and the time of maximum intensity of the induced sensation can both be accurately recorded, and although there is no precise "end point" the duration of effect can also be observed The intensity of effect cannot be measured by any yardstick, but it is quite possible to record in rough fashion one's impression of the relative strength of the sensations produced by various methods of administration

Experiments with 35 per cent gas air mixture were made with the aid of a commercial form of machine designed to deliver this concentration of nitrous oxide, the experiments with pure gas were made with the machine which will be presently described. The results are shown graphically in Fig 1

The most obvious experimental finding concerns the intensity of the sensations induced by different concentrations of nitrous oxide gas Pure gas, inhaled for only 12 seconds (two deep breaths) was found to produce a considerably greater effect than the diluted gas inhaled for 30 seconds More over, if inhalation of the diluted gas was also restricted to 12 or 15 seconds—which represents the usual time available before the climax of a labour pain—its action was greatly reduced, and by comparison with pure gas was almost insignificant in effect

Passing now to the speed of action, it was found that the diluted gas does not begin to take effect until nearly 30 seconds after the start of the inhalations, although forced deep breathing will reduce this time to about 25 seconds On the other hand, pure gas was found to take effect in 16 seconds, thus giving it a type of action well suited for the relief of the rapidly developing pain of a uterine contraction

Further experiments showed that five or six deep and moderately rapid breaths of pure gas do not in a normal person produce cyanosis, while even two such breaths are, as will be shown, sufficient in most patients to produce an appreciable degree of analgesia.

The effect of nitrous oxide reaches a maximum about 20 seconds after removal of the mask This increase of action is important when short administrations of gas are given for analgesic or for anæsthetic purposes

AN IMPROVED INTERMITTENT METHOD OF ADMINISTRATION

Since the pains of labour are intermittent, and since there is but short warning of their approach, it is essential that nitrous oxide gas should be given in a manner that will secure as speedy an analgesia as possible As has just been stated, this speed is best achieved by the use of pure gas

Hitherto, machines designed for self administration of nitrous oxide have depended for their safety on an automatic dilution of the gas with approximately 65 per cent of air If such machines were to be adapted for the delivery of pure gas it was clear that some new means of securing safety would have to be employed It occurred to me that this problem could be easily solved by introducing a device which would prevent the patient from obtaining more than a limited quantity of the gas at one time Thus, it would be a simple matter to provide a bag containing sufficient gas for two deep breaths only After emptying, this reservoir could be very slowly replenished by gas issuing from a fine nozzle When full the bag could be made to press on a cut-out lever, thus checking any further delivery of gas It will be seen that the principle is exactly similar to that of the familiar water cistern a fixed supply of water is held in the tank, the water can be withdrawn rapidly, but is slowly replaced, so that the tank is replenished only after the lapse of a considerable interval of time

The practical difficulties in constructing a machine to work on this principle have been very successfully overcome by Mr Charles King, to whom I am much indebted for help

The machine as now constructed by Messrs A Charles King Co, Ltd, London, W 1, uses as reservoir a rubber bag of [illegible] gallon capacity connected on the one side to the nitrous oxide supply and on the other to a delivery tube and face piece The filled bag automatically cuts

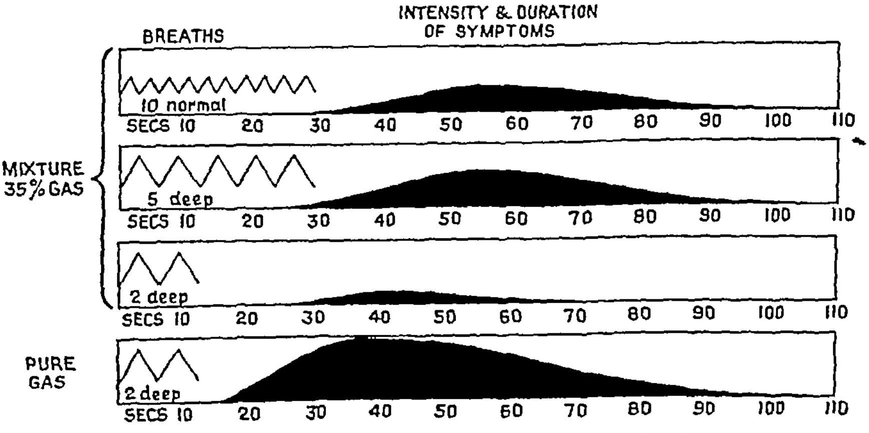

FIG 1 —Comparison of the effects induced by nitrous oxide gas when inhaled in different manners

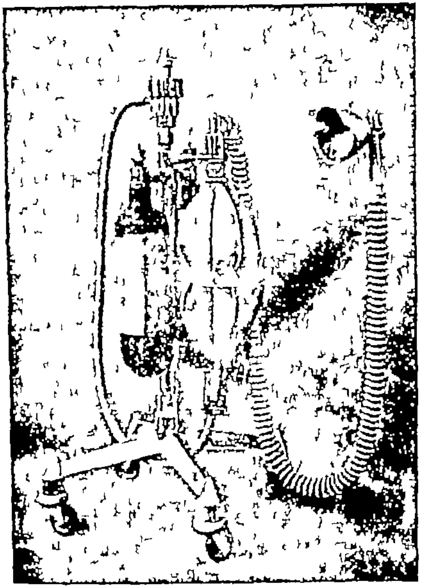

FIG 2.—The new type of nitrous oxide machine.

off the gas supply by the usual method of forcing outwards two levers, which obstruct the inflow tube Escape of gas through the exit tube is prevented by a weighted valve which is however easily lifted by the slight suction of an inspiratory effort This valve also acts as a non return valve so preventing dilution of gas by exhaled air The high pressure gas from the cylinder is reduced by an Adams valve to 5 lb per square inch Between the reducing valve and the bag is placed a fine carburettor jet through which low pressure gas flows at such a rate that a full minute is required for the reservoir to be replenished to capacity The face piece is an improved type which can be repeatedly sterilised by boiling Mounted on it is a small valve which allows the escape of exhaled air (Fig 2)

The machine is simple in construction; there are no adjustments to regulate there is no pressure gauge; nor is there need for an on and off plunger on the face piece—a complication which many patients find difficult to use The machine is comparatively cheap and is economical in use. It has been found that a patient having pains at about 4-minute intervals will consume 50 gallons of gas, costing 3s., in 4 or 5 hours.

This new form of nitrous oxide machine can be used freely whenever labour pains become distressingly severe The patient should be introduced to the machine at an early stage of her labour and given the simple instructions for its use With the first warning of a renewed pain she should instantly press the mask firmly to her face and proceed to empty the bag in two (or not more than three) deep moderately quick breaths The mask is then laid aside in readiness for the next pain The amount of gas used will never make the patient unconscious or prevent her from obeying the instructions of her medical attendant and nurse It will, however confer on the majority of patients a substantial degree of analgesia for about 60 seconds

RESULTS

Great caution must be observed in judging the value of analgesic agents in midwifery A treatment which does not abolish pain but merely lessens its intensity does not lend itself to measurement in terms of efficiency, and the difficulty is increased by the fact that a patient's description of pain is often an unreliable indication of its severity Much also depends on how questions are put and it is not uncommon for different observers to form contrary opinions regarding the usefulness of an analgesic agent in the same patient. Further I believe that statistics based on statements made by patients on the day after delivery are almost worthless. At that time the patient is often in an elated state of mind. Her baby is born and her anxiety is over in these circumstances she has a softened recollection of her troubles of the previous day and tends to praise any treatment which may have been given. If she has had chloroform for the final stage of labour the blunting and confusion of the memory may be very conspicuous and there is often a curious amnesia for the events preceding the administration of the anæsthetic For these various reasons I hold most strongly that the efficiency of an analgesic agent used during labour must be judged *while the patient is still in labour* This important condition has not always been observed in reports dealing with the use of analgesic drugs in midwifery

When judged by the foregoing standards the new form of nitrous oxide machine has given results which are surprisingly good. For each case a record was kept of the observed effect of the gas and of the parturient patient's opinion of the value of the treatment. Of 100 patients, 70 stated that they got good or very good relief of pain from inhalation of the gas, while a further 14 women described the effect as being fairly good In some cases the benefit obtained was remarkable. Thus it has happened on several occasions that a patient has declared that the gas prevented a pain from developing—meaning by this that she believed that the course of labour was being delayed Yet observation has shown that the uterine contractions were in no way impaired although the associated pain was abolished

On the other hand, 16 patients stated that the gas gave no help or that it only 'helped a little For reasons previously stated, a certain number of refractory patients must be expected. This group includes patients who for one reason or another could not follow the simple instructions for using the apparatus Some women have too little intelligence or self control to inhale in the required manner and others cannot be made to understand that the mask must be firmly pressed to the face It is seldom that an intelligent and coöperative patient fails to get substantial relief from use of the new machine

Apart from patients statements, it is my own opinion and the opinion of labour ward nurses, that patients are, almost without exception, considerably quieter and less exhausted by labour pains while making use of the new form of gas machine

Every patient likely to give a considered opinion was asked to compare a machine of the type delivering a gas air mixture with the new form of machine With two possible exceptions every woman who obtained relief from the use of gas expressed a distinct preference for the new type of apparatus One of the exceptions was a woman who declared that she got equally good relief from either machine The other was a patient who said that she preferred to use the gas air machine I did not myself see this patient during labour, but a later conversation with her left me with the impression that her testimony was of doubtful value

In the series of patients just described, gas analgesia was used throughout the greater part of labour Before the "pains" became fully established it was customary, however, to give one or two doses of tincture of opium together with chloral hydrate and potassium bromide During the final stage of labour, when the vulva begins to distend, most women become too restless to attend to a face mask and to force themselves to breathe in the correct manner Generally speaking, therefore, the use of gas should not then be persisted in, and in the present series chloroform was usually administered, preferably by the Young Simpson inhaler In several instances, however, a patient obtained so much relief from the gas machine that she refused to give it up, and was successfully delivered while still under the influence of the self administered nitrous oxide

There were no maternal deaths in this series Five patients were delivered with forceps Stillbirths numbered two one of these was a fœtus showing advanced maceration (one of a twin pregnancy) The other was a stillbirth which resulted from a prolonged labour complicated by early rupture of the membranes, in this case, too, the umbilical cord was tightly twisted round the fœtal neck

THE POSSIBILITY OF CYANOSIS

In the 100 cases described, a careful watch was kept for the possible occurrence of cyanosis This condition was never seen in obvious form * In four patients, however, it was thought that an intermittent slight cyanosis appeared, although in at least one of these cases there was difference of opinion regarding its presence In considering this matter it is necessary to bear in mind that many patients show considerable congestion of the face during bearing down efforts, and it is therefore not easy to decide whether a slight and transient duskiness is to be accepted as a token of anoxæmia due to the inhalation of pure nitrous oxide gas In none of the four cases was any harmful effect observed, and I believe that serious anoxæmia need not be feared for the reason that the periods during which oxygen is withheld rarely endure for even 15 seconds It would, however, be ordinary prudence to avoid even this reduction of oxygen intake in a woman suffering from cardiac failure or other form of respiratory distress for such a patient some other form of analgesia is obviously indicated

COMPARISON WITH OTHER FORMS OF ANALGESIA

In conclusion it may be fitting to compare the method of analgesia described in this paper with other methods which are in common use

Scopolamine and morphine, Nembutal, Sodium Amytal, and other barbiturates, either by themselves or in combination with other narcotic drugs, all have the disadvantage of erratic action; and in large dosage they are unsafe Rectal injection of ether and of paraldehyde, while reported to give excellent results by some workers, are methods which have not been generally favoured in this country, partly because of the difficulty of administration, and partly because of the variable effects produced All these drugs have the additional disadvantage that the patient becomes stuporose (in some cases restless) and must be kept under constant observation It is also generally agreed that the course of labour is delayed by their use Nitrous oxide analgesia, on the other hand, has the great advantage that the patient's coöperation is maintained, and that her labour is not hindered.

For the patient who can afford to have an anæsthetist in attendance throughout labour, nitrous oxide and oxygen can be used with almost ideal results Such a patient has the advantage that the concentration of gas can be varied to suit requirements, and even if she belongs to the "refractory type" the treatment can still be used with a fair degree of success For the less fortunately placed patient the new type of automatic apparatus gives results which, although admittedly less perfect are nevertheless surprisingly good This new machine is undoubtedly more effective in relieving the pains of labour than the type which depends on dilution of gas for the ensuring of safety It is simple and reliable, and has proved itself to be a very valuable addition to the equipment of a labour ward

SUMMARY

1 There are important advantages in the use of nitrous oxide gas as a means of securing analgesia during labour

2 Machines designed to deliver diluted nitrous oxide are often inefficient in relieving pain for the reason that it is difficult or impossible for many patients to inhale sufficient gas before the full force of a uterine contraction develops

3 Pure nitrous oxide gas has a much more rapid and intense action than 35 per cent gas air mixture, and is therefore better suited for the needs of a patient in labour

4 A new form of nitrous oxide machine is described which enables a patient to inhale pure gas at regular intervals, and so induce in herself an intermittent state of analgesia Safety is secured by a device which makes it impossible for the patient to obtain more than two deep breaths of gas before the onset of each pain

5 A series of 100 cases is recorded in which the new machine was used with success In the great majority of cases a useful degree of analgesia was obtained

Clinical experience with the new form of nitrous oxide machine has been obtained in Hammersmith Hospital (British Postgraduate Medical School), and I am indebted to the medical superintendent for providing facilities for its use I gratefully acknowledge the help of labour ward sisters in collecting case records The results are published with permission of the medical officer of health of the London County Council

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MOTHERS IN SKYE—A new maternity annexe to the John Martin Hospital, Uig, in the Isle of Skye, has recently been opened

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* In a later series of cases there was one patient who developed obvious cyanosis when she first attempted to inhale gas during a labour pain Later administrations were accompanied by a cyanosis of lesser degree Similar cyanosis followed use of a machine delivering a 35 per cent gas-air mixture This patient had the peculiar habit of almost completely inhibiting her respirations from the first warning of the onset of a labour pain and without gas in any form a distinct duskiness appeared during each pain She was later delivered spontaneously of a healthy baby

TURMERIC (CURCUMIN) IN BILIARY DISEASES

By Albert Oppenheimer, M.D
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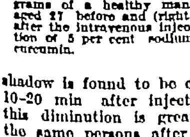
Turmeric, or *Temoe lavae*, is an oriental plant that for many centuries has been used by the native population of India in the treatment of jaundice The powdered roots and leaves form one of the chief ingredients of curry The botanical name of the plant is Curcuma there are a number of species, among which *Curcuma domestica* and *Curcuma longa* have medicinal value

EFFECTS OF ADMINISTRATION

There are references to the therapeutic use of curcuma as early as 1748 (Loeber) and 1867 (Shortt) The interest of the medical profession and the pharmaceutical industry was reawakened in 1927 when Koch and Guttenberg reported successful treatment of hepatic and biliary diseases with a preparation containing extracts of curcuma. Similar observations have since been published by Kalk and Nissen (1931) Franquelo (1933) Fähndrich (1932) Henning and Künzel (1934) Potter van Loon (1934) von den Velden (1934) Helmy (1935) Vetterlein (1935) and Leclerc (1935) Some investigators used aqueous extracts of the whole root others only the yellow pigment which it contains, called curcumin. Unlike Kalk and Nissen who attributed the therapeutic effect to a number of components extracted from the root, Franquelo and Henning and Künzel were not able to produce in men and animals any demonstrable action except by using an ethereal fractional extract containing curcumin. A solution of pure crystalline curcumin has been proved to cause identical pharmacological effects For practical purposes sodium curcumin is used since it dissolves more readily in water It is with this pigment that I have carried out a series of experiments which begun in 1932, totalled 103 observations in July 1936 The preparations used since 1934 Curcumen or Curcunat contain respectively 0 25 gramme of sodium curcumin in 5 5 c.cm. of water for intravenous injection and 0 1 g sodium curcumin with 0 1 g calcium cholate per dragée for oral administration

In healthy persons intravenous injection of 10 c cm of a 5 per cent sodium curcumin solution produces rapid emptying of the gall bladder clearly demonstrable on cholecystograms The gall bladder shadow is found to be considerably reduced in size 10–20 min after injection. Generally speaking this diminution is greater than that observed in the same persons after a fatty meal containing the yolks of three eggs The tracings here reproduced are taken from the original Röntgen pictures The effect is not constant: out of 31 examinations made for this purpose the size of the gall bladder shadow did not change at all after injection in 6 instances there was only moderate decrease in size in 12 others; the pronounced effect described above was found in 16 persons. I have not been able to ascertain what conditions determine this variability Negative evidence indicates the factors that are *not* involved. The variations are not due to inconstancy of the preparation for the self same solution may empty the gall bladder in one person yet fail to affect its size in another even if used within the same hour; nor are age, sex, body weight, and general habitus involved in this question.



Tracings from cholecystograms of a healthy man, aged 27 before and (right) after the intravenous injection of 5 per cent sodium curcumin.

After oral administration of the dye hardly any changes are apparent in the aspect of normal gall bladders In this connexion it is of interest to note that curcumin is easily absorbed from the digestive tract, and that both in rabbits and in men the pigment is eliminated through the bile-ducts within 15 min. of intravenous injection (Henning and Künzel 1934) During this interval an enormous increase of the outflow of bile subsiding with complete elimination of the dye, has been reported by these authors By means of a special test the dye was eventually found in the urine after both intravenous and oral administration only faint traces were detected in the fæces From these and our own observations one may conclude that curcumin passes through the liver inducing increased secretion of bile and frequently emptying of the gall bladder: in other words its action is both choleretic and cholagogue It is finally eliminated through the kidneys.

Clinically excellent results have been reported in the course of the curcumin treatment of biliary diseases, especially in Germany In these publications however the use of additional measures is invariably mentioned—such as diets of various kinds insulin dextrose, magnesium sulphate, and sundry other variable factors involved in hospital treatment. In an investigation of this kind the therapeutic effect of any form of medication however definite it may seem is difficult to distinguish from that of the general treatment simultaneously adopted, especially in the case of a drug heretofore unknown I have therefore restricted the administration of curcumin to those patients who did not urgently need hospital treatment. Bearing in mind the fact that a large group of biliary diseases would thus escape observation, I have used curcunat since 1933 in the treatment of 67 patients suffering from subacute recurrent or chronic cholecystitis. No other medication was given In all cases animal fat cabbage sardines preserved in oil and mayonnaise dressings were forbidden but no other restriction of diet was imposed and no form of physiotherapy was used. In addition to thorough physical examination and the usual laboratory tests, Röntgen examinations were made regularly except in the presence of severe jaundice. After a number of trials intravenous administration was abandoned for it does not give better results than the more convenient oral method. The intravenous injection of curcumin should be reserved for those conditions that require immediate action; but in such emergencies I consider dextrose and insulin in the toxic liver and the advice of an experienced surgeon in an acute purulent infection are decidedly preferable to any other procedure. Accordingly the patients here mentioned as treated with curcunat belong to the group of biliary diseases in which medical advice is sought because of persistent abdominal discomfort associated with slight recurrent jaundice

TYPICAL CASES

Case 1—A male teacher aged 37; married with two healthy children Except for typhoid fever 10 years ago the previous history is negative For the past 4 years sensation of fullness in the upper abdomen, beginning about an hour after meals, acid eructations occasionally, no definite relation of symptoms to the type of food, no vomiting, periods of much discomfort alternate with intervals of relief For the last 2 years very severe unilateral headache (right side) has been associated with the abdominal symptoms He said he had often observed yellow discoloration of the scleræ before and during periods of more pronounced discomfort No colicky pain, stools not discoloured, urine not observed

Physical examination—Nov 22nd, 1933 slight jaundice, more noticeable in the scleræ and on the soft palate The whole upper abdomen was tender on palpation, liver not enlarged, but very tender on pressure, much hyperæsthesia of the skin along the right costal arch Urine much urobilin Radiography gastro intestinal tract normal Cholecystography with oral tetragnost no gall bladder shadow After 5 days intravenous cholecystography no gall bladder shadow

Treatment—Animal fat, fried meat, and cabbage forbidden Curcunat dragées, beginning with 3 daily for three days, then 6 for four days, then 8 for two weeks

Progress—Patient went to work as usual, no rest After three days he states that he feels perfectly well The sixth day the jaundice has disappeared The twelfth day no more tenderness of the abdomen Radiography (Feb 4th, 1934) Cholecystography with oral tetragnost gall bladder shadow normal in size, position, density, shape, and reaction to fatty meal Up to July, 1936, no more discomfort except on one occasion, when after a heavy meal he had a bad headache and moderate pain in the right epigastrium, radiating to the back He took again 3 dragées daily of curcunat for a few days, after which he discontinued the medication, the symptoms having subsided immediately

Summary—Chronic cholecystitis with jaundice of 4 years' duration, and hemicrania of 2 years' duration. No filling of the gall bladder on either oral or intravenous cholecystography After treatment with curcunat and slight dietary restrictions, but no other therapy whatever, complete relief lasting two years at present Normal filling of the gall bladder shown by cholecystography 6 weeks after beginning of treatment

CASE 2—A married woman aged 25, no children Previous history negative For the past two years, off and on, distension in the upper abdomen and tendency to constipation, no vomiting, occasional, stabbing pain in the right upper abdomen, radiating to the back No jaundice observed Previous diagnosis colitis No result from the dietary treatment used

Physical examination—Jan 8th, 1935 healthy looking young woman No jaundice Liver moderately enlarged, a little harder than usual Circumscribed tenderness in the region of the gall bladder, no definite hyperæsthesia of the skin Temperature 100 2° F Jan 10th no gall bladder shadow on oral cholecystography Jan. 16th no gall bladder shadow on intravenous cholecystography

Treatment—Animal fat, cabbage, and fatty dressings forbidden Curcunat 3 dragées daily for two days On the second day much discomfort and stabbing pain in the right side Gradual increase of the medication until, after 3 weeks, 8 dragées are taken daily

Progress—Symptoms subsided entirely by the end of the first week About the middle of the third week pain in the right side associated with nausea and dizziness Close questioning reveals that she had eaten sardines preserved in oil the night before the discomfort began consequently all kinds of preserved foods were forbidden Feb 25th no more symptoms, no tenderness of the abdomen, liver no longer enlarged Oral cholecystography gall bladder shadow very dense normal in size and in reaction to fatty meal May 5th 1935 has been in perfect health ever since

Summary—Chronic cholecystitis subsiding rapidly after curcunat treatment The cholecystographic gall bladder shadow, absent before treatment, became normal 6 weeks after beginning of therapy In July, 1936, she had been free of symptoms for 15 months

CASE 3—A merchant aged 54 years Typhoid fever, amœbic dysentery and possibly Weil's disease during the Great War Since 1919 occasional diarrhœa Since 1921 irregular periods of abdominal discomfort with acid eructations, great distension, and sense of fatigue He was told by his family that his eyes were occasionally yellow Because of these symptoms the appendix was removed in 1926 After about two years of distinct relief the same symptoms reappeared Treatment with magnesium sulphate, diathermy over the upper epigastrium, and strict diet gave only temporary improvement Has gained weight since 1930, discomfort increased since Recently an attack of colicky pain in the right upper abdomen Operation therefore advised

Physical examination—April 16th 1935 patient of the short, stout, fat type, looks rather pale, distinct jaundice of the scleræ Much tenderness in the region of the liver, which was not distinctly palpable owing to muscular resistance, spleen very hard, moderately enlarged, descending colon cord like Urine traces of bilirubin, much urobilin Proctoscopy nothing abnormal Radiography descending duodenum greatly displaced towards right, angulated, tender on pressure String shaped appearance of the transverse colon No filling of the gall bladder on oral cholecystography

Treatment—Animal fat, cabbage, fatty dressings and all preserved foods forbidden Curcunat dragées, beginning with 3 daily, gradually increasing to 6 daily

Progress—Very acute aggravation of the symptoms on the second day, since then rapid improvement On discontinuing the medication, however, the patient again felt fullness and distension, he therefore got so used to the preparation that he has been taking it continuously for more than a year past Except for occasional diarrhœa he had not complained of any discomfort up to July, 1936, 14 months after beginning treatment

Summary—Chronic cholecystitis with slight jaundice Spastic colon as a residue of long past intestinal infections Symptoms subsided after curcumin treatment Has taken curcunat regularly for 14 months without feeling any ill effects

RESULTS OF TREATMENT

These are examples of the group of gall bladder diseases that have been treated with curcunat In every instance, but with slight variations, the history, physical findings, and röntgen findings were similar to those described above All the patients were treated in the same way—namely, very slight dietary restrictions, oral administration of curcunat for three weeks in increasing doses, no other therapy, no rest More or less definite aggravation of the symptoms was often observed during the second or third day of this treatment, but relief was almost invariably obtained after about a week. In many instances the symptoms recurred after several months, the patients have then been treated as before and with similar results It was not possible to follow up all of the patients so treated, but a large number were under observation for 2 years or more Of the 67 patients thus treated only one did not improve at all this one was operated upon after a few weeks and a shrunken gall bladder full of pus was removed. With this single exception all the patients were completely relieved throughout periods of observation lasting from 3 months to over 3 years No ill effects were observed or reported, even when the medication was continued for many consecutive months

In 18 cases cholecystograms were made before and after treatment, in all of them the gall bladder shadow was found either absent or very faint before treatment but of normal density afterwards Of course the absence of filling does not prove cholecystitis, nor does a normal shadow exclude it But if a non filling gall bladder appears normal with subsiding clinical symptoms, this finding, however dubious it may be in itself, is an objective confirmation of the clinical observations In this connexion it is of real interest to note that no filling was obtained before treatment, after either oral or intravenous administration of the cholecystographic dye whereas after treatment the gall bladder filled normally on oral ingestion

Since curcunat dragées contain not only curcumin but also calcium cholate the result of the treatment might be ascribed to the latter but the experiments mentioned at the beginning of this article as well as the Röntgen observations on intravenous injection of solutions of pure sodium curcumin prove conclusively that this pigment alone acts as a powerful cholagogue and choleretic in man and in animals Similar pharmacological effects have not been shown after giving calcium cholate in the doses used here It seems quite possible however that the therapeutic effect of curcumin is increased by the addition of calcium cholate, for it is well known that cholates increase and accelerate the intestinal absorption of a number of drugs

CONCLUSIONS

The demonstrable mechanism underlying the clinical results consists in the passage of curcumin through the liver and in the considerably increased flow of bile that it produces Emptying of the gall bladder a less constant factor may increase the effect. These principles apply to almost all forms of therapy known to improve or cure biliary infections. Decongestion of the liver mechanical elimination of infectious material by the increased flow of bile and antiseptic qualities have been considered responsible for the therapeutic effects observed Curcumin clearly acts similarly its effect however seems to me to be superior in chronic cholecystitis to most of the drugs used in this group of diseases For reasons already mentioned I have not treated with curcumin such acute complications as hydrops of the gall bladder purulent cholecystitis and cholangitis or ascending hepatitis In a number of recent publications satisfactory results are reported from the intravenous injection of curcunat in these conditions and since this has proved to be a perfectly innocuous drug intravenous administration may be tried in such complications if the condition of the patient justifies the experiment In general however the effect of a single mode of medication can hardly be ascertained in these cases as the severity of the illness calls for numerous therapeutic measures the results of which become superimposed and correlated

For the appropriate oral treatment the following method may be recommended: First second and third days 3 dragées daily after meals Fourth to seventh day 5 dragées daily Seventh to twenty first day 8 dragées daily The medication can be increased and prolonged if necessary

SUMMARY

Intravenous injection of curcumin the pigment contained in turmeric, produces considerable increase of the flow of bile and—but not constantly—rapid emptying of the gall bladder Curcumin passes through the liver into the intestines and is eliminated by the kidneys after either intravenous or oral administration Clinically oral administration of preparations containing curcumin shows remarkably good results in chronic cholecystitis In this series of observations these results were obtained by oral administration of curcunat under very slight dietary restrictions without any other therapy and in ambulant patients The clinical observations have been confirmed in 18 cases by radiography before and after treatment Ill effects have not been seen It seems justifiable therefore to conclude that the treatment with curcunat is a valuable contribution to the therapy of chronic cholecystitis and allied diseases

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THE ANTI CURARE ACTION OF SUBSTANCE 36

CLOSELY RELATED TO PROSTIGMIN

By Grace Briscoe, M.B Lond.

(From the Physiological Laboratory London (R F H) School of Medicine for Women)

ALTHOUGH the antagonism between curare and eserine is well known its exact mechanism has not been settled The resemblance between mild curare-poisoning and myasthenic weakness is close, but it must be remembered that their identity has not been proved. This resemblance has led to the administration of eserine and its analogues to cases of myasthenia gravis One analogue Prostigmin has been used successfully for the temporary alleviation of symptoms (Walker 1934 1935) and shows the same antagonistic action to curare as eserine Another analogue Substance 36 * has given an anti-myasthenic effect almost as good as that of prostigmin (Laurent 1936) but according to Aeschlimann and Reinert (1931) it has no anti-curare action. This discrepancy appeared to add to the problem another factor—how to explain the action of a drug which could relieve one condition and not the other It will be shown that this added complication is unnecessary

The matter is one of some clinical interest There might well be hesitation in using a drug which differed in one important particular from the rest of its group Dr Laurent informs me that he has used the drug for many months and that in some respects it has distinct clinical advantages over prostigmin It can be given in larger doses up to 2 5 mg subcutaneously without atropine Although its initial effect is less than that of prostigmin its action is more prolonged and it is therefore valuable for nocturnal administration. Patients who suffer from insomnia and nocturnal dyspnœa wake up in a more comfortable condition after an overnight dose of Substance 36 for they are still partly under the influence of the drug.

PRESENT INVESTIGATION

Aeschlimann and Reinert used changes of threshold to test antagonism It seemed worth while to test for antagonism by experimental methods already described for curarine and prostigmin (Briscoe 1936)

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* Methyl phenyl-carbamic ester of 3-oxyphenyl trimethyl ammonium methyl sulphate is Substance 36 in Aeschlimann and Reinert's nomenclature Prostigmin differs only by the substitution of another methyl group for the phenyl group I am indebted to the makers Roche Products Ltd., for a supply of Substance 36 which is not on the market

Different rates and strengths of stimuli are used and changes in shape and size of the myograms noted following administration of drugs

The test muscle is the quadriceps of the cat, in situ with circulation intact The femur is fixed in a vertical position and the movement of extension of the knee recorded by a thread attached to the patellar tendon The cut nerve is stimulated by neon lamp discharges, which can be readily controlled both in strength and frequency (Briscoe and Leyshon 1929)

Large doses of Substance 36 cause characteristic depressant effects in that fast rates of stimulation produce smaller responses than slow rates—that is normal grading is reversed The fast rate myograms are not maintained but become twitch like especially with strong stimulation The shape of the initial curve of contraction is also altered, giving a notched effect These changes are almost the same as those seen in prostigmin and eserine depression (Briscoe 1936)

Antagonism between curarine and Substance 36 has been shown in each of nine experiments It is immaterial which drug is given first

Substance 36 preceding curarine—The depressant effects of Substance 36 can be counteracted by a moderate dose of curarine Complete restoration of the myograms is difficult to achieve, but a constant result has been the return to normal grading—i e, fast rates again cause larger contractions than slow rates Fig 1 shows reversals in magnitude of contraction The notched effect produced by Substance 36 is almost obliterated 40 seconds after injection of curarine The effects of Substance 36, unless antagonised by curarine, can be traced in the myograms for several hours after injection

Curarine preceding Substance 36—(*a*) In a lightly curarised animal the responses to a fast rate of stimulation (150 per sec) give way much more rapidly than in the normal animal, resembling closely the myograms seen in myasthenic patients (Pritchard 1933) A dose of Substance 36 (0 5 to 0 75 mg per kg) injected intravenously causes a quick recovery and the myogram is restored in a few minutes (Fig 2) A similar degree of recovery due to gradual elimination of curarine would take an hour or more, as shown by control experiments (*b*) Recovery from a dose of curarine sufficient to cause a temporary paralysis is hastened by Substance 36 In three control experiments with paralytic doses the intervals between the injection of curarine and the reappearance of ability to maintain a contraction for 5 seconds (in response to maximal stimuli at 30 per sec) were 51, 40, and 44 minutes When a dose of Substance 36 was given during paralysis this stage of recovery was reached 20 minutes after injection of the curarine.

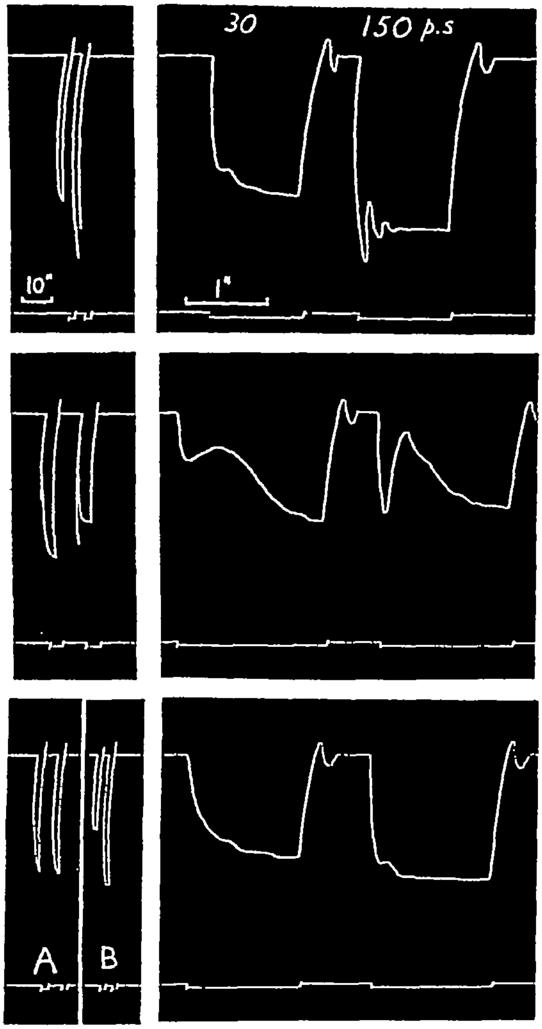

FIG 1—Cat Quadriceps Dial Contraction is downwards in all tracings Submaximal stimuli at 30 and 150 per sec shown first on slow drum then on quick In each case the slow rate precedes the fast rate

Top row—Controls in normal muscle

Middle row—Effect of 1 5 mg per kg of Substance 36 Grading reversed and well marked notches (With supramaximal stimuli 150 per sec produced twitchlike responses and no plateau formation) Slow drum record taken 8 minutes and quick drum record immediately before giving curarine (0 2 mg per kg)

Bottom row—Slow drum (A) 20–30 sec after curarine injection Contractions equal and notch effect less marked (B) 1¼ min later Return to normal grading Quick drum 40 sec. after injection of antagonising dose The response to 150 per sec is already larger than the response to 30 per sec and the notches have nearly disappeared

DISCUSSION

By using the experimental methods described the antagonism of curarine to Substance 36 is shown to

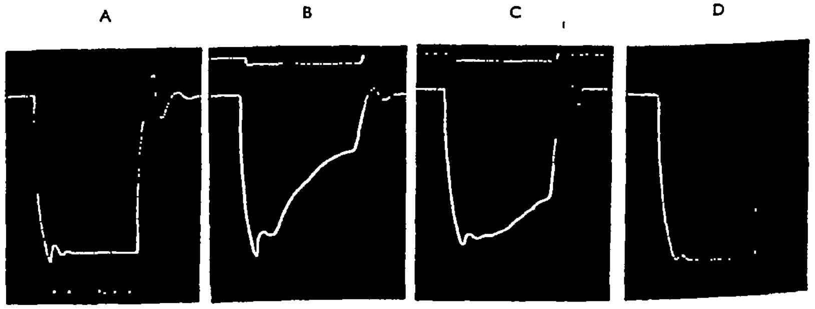

FIG 2—Quadriceps Stimuli submaximal at 150 per sec Time in fifths of seconds

(A) 12 10 P M Control curve of normal muscle 12 11 P M Curarine 0 1 mg per kg intravenously Progressive deterioration shown in records taken each minute

(B) 12 23 P M Effect of light curarisation Tension not maintained Rise of signal denotes cessation of stimulus 12 24 P.M Substance 36 (0 5 mg per kg) intravenously

(C) 12 26 P M Less depression

(D) 12 33 P M Nine minutes after injection Tension maintained be as definite as is its antagonism to eserine and prostigmin The three drugs can be grouped together as far as their reactions to overdosing and curarine are concerned

The failure of Aeschlimann and Reinert to detect antagonism may be explained on the following ground as far as can be judged from the single protocol given by them In a cat (2 7 kg) experiment they gave 20 mg of curare, divided into three doses intravenously and produced a paralysis in 18 minutes. Two minutes later 0 5 mg of prostigmin was given and in another two minutes a minimal twitch appeared at 11 34 At 11 15 a dose of 10 mg of curare was given producing paralysis in 10 minutes A dose of 3 mg of Substance 36 one minute later produced no effect but 0 5 mg of prostigmin 26 minutes later was followed in two minutes by the reappearance of a twitch During the interval of 26 minutes there had been a considerable elimination of curare and it is quite possible that a second dose of Substance 36 would have produced as good a result as the prostigmin It is even possible that the muscle was on the point of emerging from the paralysis without the help of any antagonising drug

Some figures obtained in a control experiment of repeated doses of curarine are of interest

At 10 50 0·3 mg per kg of curarine was injected intravenously This did not produce complete paralysis but small twitch like responses At 11 41 a contraction due to a strong slow rate could be maintained for 5 seconds At 11 44 a similar dose was given producing paralysis at once The first twitch like responses reappeared in 24 minutes. A third similar dose at 12 53 again produced paralysis at once and twitches reappeared in response to strong slow stimuli in 20 minutes

It has been noticed repeatedly that a second dose of curarine given after apparent recovery even if half the strength of the first, produces a more profound depression This observation gives an explanation for the success of the first immediate dose of prostigmin in Aeschlimann and Reinert s experiment and the failure of Substance 36 to antagonise the effect of a second dose

During paralysis it is impossible to know the depth of depression and the time when recovery starts It is advisable to use subparalytic doses so that a continuous record of the myographic changes can be maintained

SUMMARY

Substance 36 an analogue of eserine and closely related to prostigmin, has anti-curare properties as well marked as those of eserine and prostigmin An explanation is offered of Aeschlimann and Reinert s failure to detect this antagonism

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MANCHESTER DENTAL HOSPITAL.—Mr Samuel Turner of Rochdale has offered to defray the cost of erecting a new dental hospital in Manchester which is to be three times the size of the old one Mr Turner made a substantial donation towards the establishment of a chair of dental surgery in the University three years ago The new hospital will include a children s clinic a special department for the treatment of pyorrhœa and other chronic infections of the mouth and full facilities for research

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SPORADIC SALMONELLA INFECTIONS

WITH A CASE REPORT

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THE salmonella group of organisms contains many varieties which are closely related culturally biochemically and serologically The most recent classification is that of the salmonella subcommittee of the nomenclature committee of the International Society for Microbiology (Salmonella Subcommittee 1934) Clinically however they may be divided into two main groups the typhoid and the food poisoning

The typhoid group contains *Bacillus typhosus* and *Bacillus paratyphosus* A B and C. The type of illness produced by the paratyphoid organisms is very similar to that of typhoid the chief difference being that the course is usually shorter and less severe

Of the many members of the second food poisoning group only a few are to be commonly found as the cause of outbreaks of food poisoning, the remainder being met with only on rare occasions The type of illness usually seen is one of sudden onset with vomiting abdominal pain and diarrhœa. There may be collapse cold sweats and rigors, and herpes and rashes have been noted in certain epidemics Usually the symptoms begin to diminish after a few days but occasionally they persist for several weeks In epidemics and family infections this is the clinical picture usually seen Sporadic cases however occur quite often, and give rise to many different clinical pictures.

Smith (1934) reported two cases of infection with *Salmonella dublin* The first patient a child of 7 months died from meningitis the organism being isolated from the blood and cerebro-spinal fluid The second died with multiple lung abscesses and empyema the organism being isolated from the blood stream and pus from the empyema An examination of the fæces was negative

Kuttner and Zepp (1933) in a paper dealing with sporadic cases of *Salmonella suipestifer* infections in man noted a very varied clinical picture pneumonia arthritis, cystitis, and meningitis being reported Of the 11 cases 10 were due to European suipestifer (*Salmonella choleræ suis* var *kunzendorf*) and 1 to the American suipestifer (*S choleræ-suis*) Boycott and McNee (1936) report a case of septicæmia and meningitis due to American suipestifer Biddle (1930) reports a sporadic case of European suipestifer septicæmia, and many other single cases of septicæmia and cystitis due to *S suipestifer* of both European and American types have been recorded On the other hand Scott (1926) reports four outbreaks of food poisoning due to *S suipestifer* European type with over 100 cases and all showed symptoms of acute gastro-enteritis

Clayton and Milne (1930) report a mass infection of seven out of eight persons who had consumed an infected pork pie due to American suipestifer and all had symptoms of acute gastro-enteritis This contrasts the fairly constant clinical picture in epidemics and mass infections with the varied picture not infrequently seen in sporadic cases

A sporadic case of infection by *Salmonella enteritidis* Gaertner running a course closely simulating [illegible] was reported by Rosher and Wilson ([illegible])

Salmonella aertrycke is the organism most [illegible] responsible for food poisoning in England [illegible] clinical course taken is usually that [illegible] enteritis, although on occasion it has [illegible] to produce a long-continued [illegible] and Henderson (1928) report a [illegible] after an illness of twenty [illegible] acute mania A blood culture taken post mortem was positive for *S aertrycke*

CASE REPORT

The case was a single isolated one, in which we were unable to determine the source of infection

The patient, a man aged 48, was admitted to hospital on August 20th, 1935 Previous illnesses typhoid fever 21 *years ago* The illness commenced suddenly with vomiting, generalised abdominal pains, and diarrhœa 8 days before coming to hospital

On admission he appeared ill He was drowsy and complained of severe frontal headache The vomiting and abdominal pains had ceased, but the diarrhœa persisted for a few days His tongue was coated with a dry brown fur The abdomen was distended and tympanitic, but there was no tenderness, and the spleen was not palpable An examination of the chest, heart, and nervous system revealed no abnormality The pulse rate was 92 and temperature 101° F

Investigations—The urine was clear The stools were very relaxed, but no abnormal organisms were found in repeated examinations The leucocyte count was 8000 Agglutination tests showed weak agglutination with the salmonella group suspension Blood culture, taken the day after admission, was positive for *S aertrycke* (*Salmonella typhi murium*) The patient's serum 8 days later agglutinated *S aertrycke* in a dilution of 1 in 2500

Progress—The diarrhœa ceased 2 days after admission and did not recur The temperature remained high and continuous for 9 days, coming down by crisis During this time his general condition became gradually worse, and no improvement was shown with the fall of temperature He developed severe pains in the shoulders and lower cervical spine, which were persistent and unrelieved by salicylates He became mentally confused and lost sense of time and place, and he was doubly incontinent The urine was found 18 days after admission to contain large quantities of blood and pus, and on culture *S aertrycke* was isolated

On the 27th day after admission the temperature, after having been normal for 18 days, rose again to 101° F, and varied between 101° and 102° F for a week, gradually returning to normal after 15 days A blood culture was done and *S aertrycke* isolated Agglutination tests showed agglutination of *S aertrycke* (specific) in a dilution of 1 in 2560, and of the group suspension in 1 in 5120 The organism isolated from the blood stream was agglutinated by the patient's serum in a dilution of 1 in 640 An examination of the nervous system now revealed much exaggerated knee jerks and ankle jerks, and a double extensor response The reflexes of the upper limbs were normal The abdominal reflexes were sluggish but all present Owing to the patient being so very ill only a superficial examination of the sensory system was obtained, but no abnormality was detected The temperature fell by lysis and became normal 42 days after admission, after when the patient gradually began to improve, and was discharged to a convalescent home 125 days after admission The urine showed the presence of *S aertrycke* for 3 months, but three specimens examined later at monthly intervals were negative

Result—The patient now 14 months after the onset of the infection, feels quite well, and his only complaint is that he is not quite so strong on his legs as before his illness The knee jerks and ankle jerks are still much exaggerated, and there is a double extensor response The reflexes of arms are normal and abdominal reflexes are present The blood Wassermann reaction is normal, and the cerebro spinal fluid normal in all respects

SUMMARY OF UNUSUAL FEATURES

(1) The length of duration, 4 months and severity of the illness

(2) The failure to find the organism in repeated examinations of the fæces

(3) The isolation of the organism from the blood stream at the commencement of the illness, and again 27 days later, when there was a secondary rise of temperature after it had been normal for 18 days The invasion of the blood stream in both cases was transitory, as examinations repeated in each case 2 days later were negative

(4) The invasion of the urinary tract, and persistence of the organism in the urine for 3 months

(5) Arthralgia of shoulders and cervical spine

(6) The neurological signs—weakness of the legs with increased deep reflexes and double extensor responses, the arms being unaffected—suggesting a myelitis

COMMENT

These invasive clinical pictures, where the course taken resembles typhoid fever, are seen only amongst the sporadic cases, and it is therefore important to consider the factors which may give rise to a sporadic case, and which, if any, of these factors could be responsible for the unusual clinical pictures so often seen.

The factors which might give rise to a sporadic case are

(1) The patient may have eaten more of a particular dish than the rest of the family

(2) The bacilli might be distributed unequally in the food

(3) The alimentary tract might be less resistant, possibly due to a previous infection of gastro enteritis

(4) The patient may be specially susceptible to the organism

(5) The resistance of the patient may be lowered by some factor—for example, an operation, with activation of latent bacilli

Cases have been reported following operations Biddle (1930) reports a case of *S suipestifer* septicæmia discovered in a patient six days after an operation for a ruptured ectopic gestation Küttner and Zepp (1933) report a case of *S suipestifer* septicæmia and cystitis occurring in a patient following a radical antrum operation Elkeles and Standfuss (1931) explain the rare cases following operation as being due to an activation of latent bacilli in the bowel Increased dosage or increased virulence of the organism cannot be the explanation of the more invasive clinical pictures, as they should then occur also in the epidemic cases

An individual hypersusceptibility might explain both the sporadic nature of a case and also the unusual invasive clinical picture However, if this were the true explanation, a proportion of such hypersusceptible individuals should be amongst those attacked in epidemic outbreaks

A lowering of the resistance of the patient, with activation of latent bacilli, would explain both the sporadic nature of the attack and the varied clinical picture

The resistance of the patient being low, the organism quickly enters the blood stream, and may invade the bladder, meninges, lungs, or joints without in many cases attacking the gastro intestinal tract There is also the possibility that organisms which have been lying latent in the body may, as the result of time and adaptation to an altered environment, become more virulent, and so resemble in their invasive properties the closely related typhoid and paratyphoid members of the group An activation of latent bacilli would also render the determination of the original source of infection impossible, and the difficulty of finding the source of infection is a characteristic feature of sporadic cases

As noted by Smith, it appears that of the salmonella organisms commonly met with *S dublin* and *suipestifer* are much more frequently the cause of septicæmic manifestations than are *S enteritidis* Gaertner, *S thompson*, and *S aertrycke* The case of aertrycke infection described here however, in its course and complications, resembled a severe typhoid infection, and it appears that any of these closely related *organisms may under certain conditions invade the* blood stream and give rise to any of the symptoms or complications seen in infections by the typhoid group

SUMMARY

1 The clinical picture in sporadic salmonella infections is very variable, and cases where the organism invades the blood stream and the course taken resembles *typhoid fever are not uncommon*

2 This contrasts with the fairly constant clinical picture of gastro-enteritis seen in epidemics and family infections

3 A sporadic case of *S aertrycke* infection is described, in which the illness resembled a severe case of typhoid fever

4 A lowering of resistance with activation of latent bacilli is suggested as an explanation of the typhoid like illness seen in some sporadic cases It is also possible that the bacilli as a result of time and adaptation to an altered environment become more virulent, and so resemble in their invasive properties the closely related typhoid and paratyphoid members of the group

5 Cases following operations support this explanation

6 *S dublin* and *suipestifer show a much greater* tendency to undergo this change than do the other members of the group commonly met with—*S enteritidis* Gaertner *thompson* and *aertrycke*

I desire to express my thanks to Dr A. B Rosher for his assistance in the bacteriological investigations involved and to Dr J G Leebody medical superintendent of St George-in-the East Hospital for his permission to publish the case

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HERNIO-APPENDICECTOMY

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MORE than one attempt has been made to devise an extraperitoneal approach for the radical cure of hernia. The most successful is probably Lotheissen's operation for femoral hernia. A. K Henry (1936) has described a midline incision for dealing with both femoral and inguinal herniæ by the extraperitoneal route which he claims may be used effectively even in difficult cases

It is likely nevertheless that the Bassini operation or some modification of it will remain the operation of choice for inguinal hernia in persons over 25 and in all complicated cases In children on the other hand and probably in young adults all that is necessary is removal of the sac the whole sac and nothing but the sac If one were to propose any departure from these well established principles it would be necessary to show that the innovation was equally innocuous, equally efficient and, further that it provided some specific advantage not to be attained by the more orthodox methods The operation about to be described has been confined so far in the main *to children over 2 and young adults, and* I do not at present feel inclined to advocate its extension to older patients or complicated cases In the hands of those accustomed to operating on young children I see no reason why the procedure should not be carried out more often at an even earlier age

The position of the internal ring is identified just above Poupart's ligament midway between the anterior superior spine and the middle of the crest of the pubis A finger's breadth above the ring the usual oblique incision is made in length perhaps 1½ inches The external and internal oblique muscles are split in the line of their fibres the lower border of the transversalis usually lies at a higher level and can be hooked up out of the way The extraperitoneal tissues are now reached and the rounded bulging edge of that membrane can be seen giving off a process which passes at once into the internal abdominal ring This is of course the hernial sac It is picked up with forceps and carefully cleaned as in any other operation for hernia. It should be noted *that in young children even a small amount of pull* on the sac with its attached cord may drag the testis up into the canal After one's manipulations are completed in these little patients one ought to make certain therefore that the testis has not been displaced.

The cleaning of the sac is begun on the inner side and here lying well to the back will be found the vas deferens to the outer side of which behind the sac, are placed the spermatic vessels The isolated sac is cut across, the distal end neglected, and the edges of the proximal opening secured with forceps If necessary the peritoneal aperture may be enlarged. It is usually easy to secure the cæcum with Duval's forceps but if it fails to appear it can be identified with the finger and so captured. The appendix, if normal, can then be removed but if adhesions give rise to difficulty I *consider one is amply justified* in enlarging the muscle wound to give proper access to the iliac fossa. At the end of the operation the peritoneum is closed the internal oblique drawn together with a single stitch and the external with two

It can be claimed, with confidence I think that the three considerations needed to justify an innovation of this kind have been satisfied There could hardly be any procedure less injurious to the abdominal wall, and although I would hesitate to make claims for its infallibility it is theoretically sound I can only state that during the ten years or more during which I have practised it I have not seen or heard of any suggestion of recurrence The specific advantage gained is of course easy access to the appendix without unduly prolonging the operation or prejudicing its success In this connexion it should be mentioned that Torek in 1906 *urged that* when in the right inguinal region the surgeon should take the opportunity of removing the appendix and others following him have supported this view They point out—and in my earlier cases I took pains to confirm this observation—that the appendix is abnormal in a surprising proportion of cases. Even more important however is the problem of prophylaxis. Every surgeon I think, is agreed that when in the course *of an operation* the appendix can be removed without detriment to the patient this should be done The operation just described claims to bring radical cure of hernia in certain cases into the category of such operations

In Torek's procedure an extension of the hernia incision was made in an upward and outward direction to enable the surgeon to make a small gridiron opening through the muscles and so remove the appendix It was a gridiron appendicectomy superimposed on whatever type of herniotomy the surgeon might favour In the procedure I describe the approach to the appendix is an integral part of the radical cure

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SULPHÆMOGLOBINÆMIA FOLLOWING SULPHANILAMIDE TREATMENT

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Prontosil Album and other brands of sulphanilamide (which is another name for *p* aminobenzene sulphonamide, *p* aminophenylsulphonamide, or sulphonamide P) have been used generally for some months Trefouël and others (1935) and Fuller (1937) have shown that the soluble red azo dye Prontosil Soluble (for injection) and the almost insoluble orange azo dye Red Prontosil (oral) are bactericidal only after reduction to sulphanilamide For this reason, and to avoid the pain associated with the injections of prontosil soluble, many workers have used sulphanilamide alone, which can be taken by mouth.

At first this substance was believed to be non toxic later it was found to produce occasional cases of sulphæmoglobinæmia (Colebrook and Kenny 1936a, three cases, Foulis and Barr 1937, two cases, Thomas 1937, Frost 1937, one case each) Frost did *not use sulphanilamide, but prontosil soluble and* N benzyl sulphanilamide (Proseptasine) on which no other clinical reports have so far been published The impression given by these three papers is that sulphæmoglobinæmia may be an occasional complication *of sulphanilamide treatment,* but that it is unusual

When one case of extreme cyanosis following sulphanilamide was recognised at St Bartholomew's Hospital, all patients who were receiving, or who had recently received, that substance were carefully examined Of seven patients who had received over 5 grammes, six showed some degree of sulphæmoglobinæmia, three showing marked cyanosis All these patients received the Prontosil brand of sulphanilamide It appears that sulphanilamide is one of the most active drugs for the production of sulphæmoglobinæmia at our disposal

Of these seven patients, four (*Nos 1, 2, 3, and 4*) received frequent doses of magnesium sulphate, two of these (Nos 1 and 4) developed cyanosis, while two (Nos 2 and 3) showed a less degree of sulphæmoglobinæmia One patient (No 5) who developed cyanosis received only two doses of magnesium sulphate, and one (No 6) which received no magnesium or sodium sulphate by mouth, but who did have dressings of sodium sulphate on a large gangrenous area, developed a very slight sulphæmoglobinæmia The one patient (No 7) who did not show any abnormal pigments in the blood, in spite of long continued sulphanilamide treatment had no sulphates by mouth or as a dressing during the treatment None of the patients affected has died all are recovering

CASE REPORTS

Case 1 —Mrs A aged 31 Panophthalmitis multiple streptococcal abscesses following lobar pneumonia Admitted on Jan 1st, 1937, having had prontosil album for three days previously Between Jan 23rd and Feb 15th received a total of 41 4 grammes of sulphanilamide, or 1 8 g daily Between Jan 26th and Feb 5th received also 85 c cm prontosil soluble, or 2 125 g Received magnesium sulphate at irregular intervals during this period On Feb 15th cyanosis of *the lips and finger* nails was observed and on the 18th this was shown to be due to sulphæmoglobinæmia The appearance of the *patient at this time* was characteristic, *the lips and nail beds a cold blue, the face* very pale, the blood even after shaking with air, remained a deep brown It was indeed surprising to find her cheerful and talkative, not in the least worried or inconvenienced by her condition No quantitative estimation was possible at this time, but the strength and persistence of the α band of sulphæmoglobin suggested that at least 40 per cent of the hæmoglobin present was in that inert form

Case 2 —Miss B, aged 19 Mastoiditis, Schwartze operation Received 16 2 g sulphanilamide between Feb 9th and 19th (1 8 g *daily*) *Magnesium sulphate* was given irregularly between Feb 1st and 16th On the 19th a faint band due to sulphæmoglobin was seen in the *patient's shed blood* There *was no* cyanosis *and* she left hospital on the 20th

Case 3 —Miss C, aged 20 Lupus erythematosus, suspicion of pulmonary tuberculosis Between Feb 3rd and 18th received 27 g sulphanilamide (1 8 g daily) Magnesium sulphate was given irregularly during this period On Feb 18th the α band of sulphæmoglobin was observed in the patient's shed blood It was stronger than that shown by Case 2, but there was no cyanosis

Case 4 —D E, aged 21 Mastoiditis, Schwartze operation, lateral sinus thrombosis, osteomyelitis resection of the third right costal cartilage Between Feb 4th and 18th received 25 2 g sulphanilamide (1 8 g daily) Magnesium sulphate was given daily from Jan 31st until Feb 21st except on the 12th On the 18th obvious cyanosis was present, shown to be due *to sulphæmoglobin by spectroscopic examination on the* 20th In this case the blood showed a brown tint, though less than that from Case 1

Case 5 —Mrs F, aged 51 Streptococcal abscess left thumb Pus contained hæmolytic streptococci Between Feb 13th and 26th received 25 2 g sulphanilamide (1 8 g daily) *On Feb 19th and 21st magnesium sulphate* was given Examination on Feb 22nd had shown no evidence of sulphæmoglobinæmia, yet on the 26th the patient developed cyanosis, almost as severe as in *Case 1* Her blood was brown, even to the untutored eye, and showed an intense α band of sulphæmoglobin On, Feb 13th and *14th* polyvalent antistreptococcal serum had been injected and a serum reaction, with fever and an urticarial rash, developed on the 21st 22nd, and 23rd This may have some relation to the sudden onset of cyanosis

Case 6 —Miss G, aged 15 Gangrene of chest following chicken pox, pus contained hæmolytic streptococci Between Feb 16th and 26th received 18 g sulphanilamide (1 8 g daily) No magnesium or sodium sulphate was given by mouth but sodium sulphate dressings were applied to the gangrenous area On Feb 27th a faint but easily seen, band of sulphæmoglobin was detected in the patient s blood

Case 7 —H I aged 28 Osteomyelitis of the left maxilla *Between Jan 25th and Feb 18th he received* 41 4 g sulphanilamide (1 8 g daily) No magnesium or sodium sulphate was given by mouth or in dressings No sulphæmoglobin could be detected on the 18th or 23rd

Case 8 —J K, aged 10 Mastoiditis Schwartze operation, diabetes mellitus This boy had only 2 7 g sulphanilamide in three days and occasional doses of sodium and magnesium sulphates No sulphæmoglobin was found and this case is not included in the discussion on account of the small total dose and short period of administration

DISCUSSION

The occurrence of sulphæmoglobinæmia in 6 out of the first 7 cases undergoing a moderately long course of sulphanilamide treatment may be fortuitous it seems far more probable that it represents a genuine correlation and that the occasional frank cyanosis is due to a quantitative rather than qualitative difference in the action of the drug. The results presented here neither confirm nor deny the suggestion (Colebrook and Kenny 1936a, following van den Bergh and Revers 1931) that there is some connexion between magnesium sulphate and the development of sulphæmoglobinæmia in sulphanilamide treated patients It is hoped that in the near future it will be possible to present a series of cases treated with sulphanilamide which *have had no sulphates either by mouth or as dressing*

The cyanosis caused by sulphæmoglobin is spectacular and alarming but fortunately it does not produce any very serious consequences if the drug is stopped as soon as it is noticed in the three cases *described here the patients were annoyed when attention was drawn to their condition but not in* the least perturbed The only troublesome consequence is that the stay in hospital may be prolonged All these three had fairly high hæmoglobin figures *the lowest being 48 per cent This condition may* be dangerous however if the total hæmoglobin percentage falls below about 30 per cent (Haldane scale) for then cyanosis cannot occur and the drug responsible for the sulphæmoglobinæmia may be continued until *over half the total hæmoglobin* present is changed to the inert form the plight of a patient with a streptococcal infection and about 15 per cent. active hæmoglobin may easily be imagined.

For this reason it is impossible to regard a careful watch *for cyanosis as a sufficient precaution* The *total hæmoglobin should be determined and the* patient s blood should be examined regularly at intervals of less than four days (cf Case 5) It is best to examine the shed blood, diluted with water or ammonia *but quite small quantities of sulphæmo*globin can be detected by examining the blood in the lobe of the ear using a torch and direct-vision spectroscope as described by Harrison (p 204) The necessary skill may be acquired by a little practice

*There can be no doubt that in these cases sulphæmo*globin not methæmoglobin was present It is found that dilution of blood with 0·4 per cent ammonia destroys the α band of methæmoglobin but does not affect that of sulphæmoglobin all *specimens of blood* were examined in water and in 0·4 *per cent ammonia One or more other tests* were made on each blood ; persistence of the α band on treatment with reducing agents (ammonium sulphide sodium hydrosulphite) shift of the α band towards the violet on treatment with carbon monoxide matching the α band in the Hartridge reversion spectroscope with that of sulphæmoglobin artificially prepared from normal blood One sample of blood was submitted to all these tests by Dr G A Harrison (Case 1)

Thanks to the work of Tréfouel et al (1935) Colebrook et al. (1936) Fuller (1937) and others referred to in their papers some knowledge is being obtained as to the mode of action and suitable uses of sulphanilamide So far its advantages seem heavily to outweigh its dangers and its use is being limited and extended as more knowledge is obtained. It is *however very important to be alert to all possible* complications and the possibility of grave anoxia due to unrecognised occurrence of sulphæmoglobinæmia should be borne in mind while still more information is available the administration of magnesium or *sodium sulphate* to sulphanilamide treated patients should be forbidden

SUMMARY

(1) Sulphæmoglobinæmia is a commoner consequence of sulphanilamide treatment than has hitherto been recognised (2) Sulphæmoglobinæmia is dangerous to anæmic patients (3) Regular *spectroscopic examination of the blood of all patients* receiving sulphanilamide is therefore advocated.

My *thanks are due to those members of the honorary* staff of St Bartholomew s Hospital, Prof J Paterson Ross Dr A. C Roxburgh Mr Sydney R Scott and Mr R Foster Moore who have given me permission to publish details of their cases to their house surgeons to Dr G A. Harrison and Dr H E Archer for their advice and assistance and to the nursing staff, especially to Miss Capon.

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Clinical and Laboratory Notes

COMA AS THE FIRST SYMPTOM OF DIABETES

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DIABETIC coma in spite of insulin is very often fatal and usually presents difficulties The case to be described may be of interest because it showed one feature that I had always considered a sign that death was certain—namely commencing anuria—but *nevertheless* ended in recovery

So far as could be ascertained the patient s symptoms began on Thursday May 30th with headache and vomiting which were ascribed to dietary indiscretions by her medical man ; he ordered a simple laxative régime Nothing unusual happened until *the following* Tuesday afternoon (June 4th) when a kind *of delirium set in and the* doctor was sent for again She was a woman of 28 *the age sex, and various other circumstances* suggested a diagnosis of hysteria, but he was not satisfied that this was really the condition As she did not improve he asked me to see her the same evening When I arrived at about 9 P M she was lying in bed semi-conscious and talking nonsense She had a dry cracked tongue dry skin and breath smelling strongly of acetone By this time the diagnosis was clearly one of diabetic coma and she was sent to hospital at once The urine had been examined three days previously when her illness began, and had been found free from sugar and albumin.

When she reached hospital about 10 P M I found the urine (catheter) contained a very large amount of diacetic acid and 8 per cent of glucose A blood sugar estimation, made while the ordinary routine *preliminary* coma treatment of rectal washouts and glucose-saline enemas was being carried out gave a reading of 0·77 per cent (Folin and Wu s method) *As she was still just rousable* hot saline and 10 per cent glucose with 5 per cent bicarbonate of soda was given by mouth almost continuously and her nurse *was instructed that she must be made to drink at* least three pints of this hot saline before morning At the same time 60 units of insulin was given immediately *to be followed by another 60 units in two hours.* As this did not lessen the depth of coma an attempt was made to give an intravenous glucose saline, but she was a plump girl and the vein could not be found, so a further 100 units of insulin was given intramuscularly, and rectal and oral administration of glucose saline continued.

By the morning she was obviously worse and absolutely comatose, she had stopped passing urine, the temperature was falling (97·2° F.), there was much air hunger with a very slow respiratory rate and the blood sugar content was 0·8 per cent. A vein was exposed and intravenous administration of glucose saline begun. She was given two pints of saline with 10 per cent. glucose and 10 per cent. bicarbonate of soda. The rectal saline was continued by means of a Murphy's drip apparatus and insulin was administered in doses of 100 units every four hours. With the idea of trying to counteract the anuria, radiant heat was applied by means of the ordinary electric lamp bed cage for several hours. By the evening of this the second day in hospital (June 5th) there was a suggestion of improvement, the temperature rose to 97·8° F., the tongue was noticeably less dry and cracked. By the following morning (June 6th) she had begun to pass urine again (750 c.cm. during the 24 hours) and coma gradually lessened. At this time the blood sugar was 0·17 per cent., and during the day she made a complete recovery from coma.

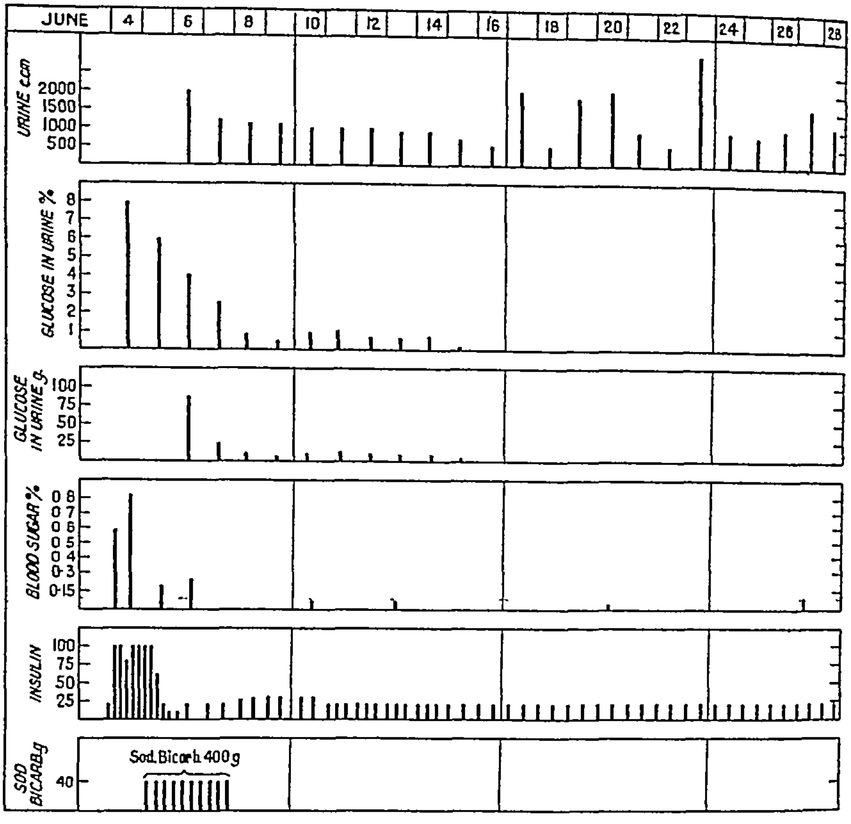

Chart showing the quantities of insulin and sodium bicarbonate given and the changes in secretion of urine glucose in urine and glucose in blood

During the 25 hours of really intensive treatment she received 800 units of insulin; the question of giving pituitrin was discussed but finally answered in the negative.

In an influenza epidemic about the same time I was so unfortunate as to lose three of my old diabetic cases from coma immediately following an attack. Without exception they were all anuric for about 24 hours before death, and the symptom was then impressed on me as a sign of impending fatality. When this symptom appeared in the above case I gave a fatal prognosis to the relatives, and it is of interest to know that the symptom does not necessarily mean that death approaches. We had been on the look out for anuria from the experience in the three previous cases, and as soon as there appeared to be a diminution in the quantity of urine passed the radiant heat was started.

There are one or two points of interest in the case. First of all the fact that diabetes had not been suspected, there having been no previous ill health. Secondly the development of deep coma was extremely rapid, for coma was complete within eight hours of the onset of the first symptoms. Thirdly the blood sugar was very high at the time of deepest coma. I have only once seen a blood sugar value of 0·8 per cent., and this was in an elderly patient who also had chronic granular nephritis and who died of uræmia after recovering from a diabetic coma for a few hours.[1] A further point of interest is the very large dose of insulin given in a few hours. There is no doubt that without insulin this girl would have died, for insulin is the only hope in diabetic coma and even now only becomes a hope if given in sufficiently large doses. The danger of insulin, at any rate in coma cases, lies not in giving too much but in giving too little. The Chart represents the progress of the case for a month, day by day.

The patient now, seven years later, remains well and is doing her work as a checking clerk on the railway. Her diabetes is moderately severe, requiring 30–40 units of insulin daily, and she has been in hospital three times—twice with mild diabetic coma and once with hypoglycæmic coma.

ECLAMPTIC HEMIPLEGIA

By Miron Hajkis, M.B. Oslo, L.M. Rotunda

Eclampsia has been known since Moriceau described it in 1688. The rarity, however, of palsies in the clinical picture of the disease stands in striking contrast to the frequency of intracranial hæmorrhage or of areas of softening in the brain. This was pointed out by Schwanen (1934) who collected 34 cases of paralysis in eclampsia and toxæmias of pregnancy, and described three of his own cases.

The central hæmorrhage is a sudden one and the palsy is soon complete (Talley and Ashton 1925), the coma followed by hemiplegia is profound and tenacious (Brindeau 1927). The mortality is 50 per cent., which seems to be independent of the number of fits but determined by the size of the central focus. The patient's age is of no importance in the prognosis (Schwanen 1934). According to Talley and Ashton only a few of those patients living had permanent palsies left and even those show improvement Other causes of central puerperal palsies more frequent than cerebral hæmorrhage are cerebral thrombophlebitis and sinusitis and cerebral embolism from a septic thrombophlebitis in the pelvis from a thrombosis of lower extremities either frank or concealed or from endocarditis. Brain abscess and purulent meningitis as incidents in general septicæmia may also lead to puerperal palsy Brindeau says that it is usually impossible to diagnose the cause.

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[1] Imrie, C. G., and Skinner, E. F. (1924) Lancet, i, 14.

The patient was a primipara a strongly built woman aged 37 who had not been ill previously A fortnight before labour she had headache nausea and heartburn as well as increasing œdema of the lower extremities She had not received any antenatal treatment During the labour which was at full term she had 3 series of convulsions, the last of which was just before spontaneous delivery It was violent and was followed by 4 hours of deep coma The child was stillborn

Even at that time while the patient was in coma, the right arm and leg were remarkably flaccid so that it was assumed that hemiplegia was a fact When she recovered consciousness total paralysis of the right upper and lower extremities and paresis of the lower portion of the facial musculature of the right side was observed There were no serious disturbances of speech Eyes and ears normal No rigidity of the back and neck. Kernig s and Brudzinski s sign absent No hyperæsthesia No clinical evidence of tuberculosis.

The rise in temperature 100 4–101 8 F and in the pulse-rate 92–112, was observed for 5 days Œdema of the lower extremities disappeared within a week albuminuria lasted for 3 weeks On the paralysed side the deep reflexes were increased; Babinski s sign present The other superficial reflexes were diminished The sphincters were normal.

The palsy of the spastic type was slow in recovering It was more than a year before the paralysis had become reduced to the permanent state of limited mobility o the right wrist and fingers, and some muscular atrophy of the hand the skin on the dorsum being somewha thin and glossy Patient now complains of sensation of cold in the hand which is rather cool to the touch When working and eating she uses her left hand Sh also complains of paræsthesiæ in the right foot whic becomes quickly tired but there is no paralysis in the leg The facial paresis has completely vanished.

Two years after the labour she had a normal delivery o a living baby and she has otherwise been well

The cause in this case seems to have been a cerebral hæmorrhage, because of the sudden onset of a complete paralysis A cerebral thrombosis or an embolu —e.g from a concealed thrombophlebitis in the pelvis—seems to be less probable. There were no signs of septicæmia or endocarditis, and no clinical evidence of thrombosis of lower extremities The post-partum rise of temperature and pulse-rate must be regarded as a febrile reaction from the cerebral hæmorrhage or the toxæmia.

DeLee (1934) observes that a neurological examination would perhaps reveal a tuberculous or other meningitis instead of that of eclampsia. The investigations carried out in this case, however rule out the possibilities mentioned by DeLee of diseases other than eclamptic hemiplegia.

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Sund Bergen Norway

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTIONS OF SURGERY AND RADIOLOGY

These sections held a joint meeting on March 3rd with Prof. G Grey Turner, president of the section of surgery in the chair Mr W Sampson Handley opened a discussion on the value of pre- and post-operative

Irradiation in Malignant Disease

with special reference to carcinoma of the breast He said that post operative irradiation was of most value in preventing recurrence through implantation of malignant cells from the original growth at operation If radium destroyed massive recurrences some time after operation a fortiori radium applied just after the operation would destroy the individual cells from which recurrences grew Deep X rays were probably as effective for this purpose as radium which was known to destroy massive recurrent growths and ought therefore to be still more capable of destroying individual cells Implantation was always a danger and there were very few cases in which it could be disregarded A short course of deep X rays should be given to the operation scar in all cases of gastric intestinal or pelvic cancer as well as after operations for mammary growths and cancer of the cervical glands Alternatively radium tubes could be inserted at the time of operation On the whole he was not in favour of pre-operative irradiation for several reasons It produced a general and local reaction from which the patient must be allowed to recover before operation which was sometimes thus postponed for an undesirable length of time allowing extension of the dangerous deep parts of the growth. The operator could not guarantee that the pre-operative irradiation would affect the whole growth and deep microscopical extensions of it might progress during the interval. Even with modern high voltage X rays it was difficult to give a sufficiently intense deep dose to kill carcinoma cells without damage to the patient s tissues. X rays would often cause the primary growth to regress and become mobile but, as Mr Handley showed by several slides individual cells from the growing edge would still continue to reproduce Intensive deep therapy hindered the surgeon by lowering the patient s vitality Moreover X rays were used to better advantage after the operation because they had not then to penetrate a thick mass of mammary tissue in order to meet the deeper layers such as the intercostal muscles and the pleura Before operation even deep X rays would not deal adequately with the internal mammary and apical axillary glands The internal mammary glands should be treated at operation by interstitial radium and the apical glands should be removed He agreed that it was impossible to make a trustworthy estimate by statistics of the relative merits of pre-operative and post-operative irradiation The best hope for progress in treatment lay in public education to the vital necessity of prompt treatment of suspicious lumps in closer study by radiologists and surgeons of the details of dissemination and in the adoption practically as a routine after carcinoma operations of a short prophylactic course of X rays of at least 180 000 volts

Good results had been claimed for surgical or radiological oöphorectomy but Ahlbom had concluded that radiation castration together with local radiation was no better than local radiation alone in 163 cases observed at Radiumhemmet. The only real value of castration was *to prevent subsequent* pregnancy—a result better achieved by contraceptive methods. Subsequent pregnancy was undoubtedly dangerous; of fifteen cases of pregnancy after carcinoma of the breast, thirteen promptly developed cancer in the remaining breast. Even among radiologists there was division of opinion as to the value of pre-operative radiation. F. E. Adair and F. W. Stewart had tried carefully to assess its value. Thirty-nine patients had been given a radium pack of 4 g. at a skin distance of 6 cm., using four ports, the dose being 20,000 to 44,000 m.c.h. per port. In 28 per cent. the tumour had completely disappeared, and in 13 per cent. no growth had been found in the glands. In 28 per cent. visible cancer had still been present in the breast, and in 73 per cent. in the glands. Forty-two cases had had pre-operative X rays of 200 kv.; the growth in the breast had been destroyed in 16.5 per cent., but the growth in the glands had never been affected. These results did not offer the method much support.

Dr. W. M. LEVITT put the case for a combination of radiation and surgery. In any given series of cases it might be said to be assumed that x cases would be well after five years if treated by surgery and y if treated by X rays. The individuals in either groups would almost certainly differ according to the variation in the factors which made either for radio-sensitivity or for operative success. It was therefore reasonable to suppose that if the two groups of treatment were combined, a more or less complete summation of the successes would be obtained. It had at one time been the common practice in combining the two methods to carry out the radical operation first and regard the X ray therapy as a doubtful safeguard afterwards. Even the radiologist had fallen into the error of being satisfied with a less thorough radiation than he would have given in a case of appreciable disease. Carcinoma cells required a lethal dose, whether the colonies were small or large. Moreover, the X rays had to be distributed over just as wide an area in order to include the whole chest wall and clavicular region on the affected side. Probably owing to under-treatment, post-operative irradiation had not in the past produced spectacular improvement in the published results, although local recurrences had materially decreased. The surgeon was usually in favour of post-operative irradiation; his objections to pre-operative irradiation were those given by Mr. Sampson Handley. The question was whether the irradiation could prevent fresh secondaries and, if so, at what stage in the treatment it was effective. The danger of operating in under a fortnight after irradiation must be offset by the reduction of the danger of implantation and dissemination at the operation. High voltage therapy could convey an adequate dose to the deeper tissues without injury to the superficial tissues, and would also adequately irradiate internal mammary and apical axillary glands, for the hard rays would easily pass through bone. There was definite experimental evidence, in favour of pre-operative irradiation, that irradiated carcinoma cells were less likely to flourish if implanted into a new site at operation and also that they were much less likely to take root in irradiated tissues. Moreover, irradiation caused considerable reduction in the areas of growth through damage to the tumour cells. Irradiated cells, though they might survive, often could not reproduce, and this fact might account for the well-known delayed effect of irradiation. Pre-operative irradiation with maximum doses had in many cases led to sepsis and disaster, so that some reduction in the dosage had been necessary, but this deficiency could be made up by a supplementary course of irradiation as soon as the patient had recovered from the operation. The experience of foreign clinics had shown that this method was safe.

The sooner irradiation was given after operation the better, but it was better to wait until the stitches had been removed. The supplementary course should be given two or three weeks after the first post-operative course. No modification was called for in the radical operation, provided that undue tension on the stitches was avoided. The use of the diathermy knife did not appear to increase the risk. Where only post-operative irradiation was being considered the field was unsuitable for interstitial radium, and X rays were more satisfactory than surface radium, for they gave a more uniform dosage over a wide area. Internal structures could be protected by tangential methods of application.

Pre-operative irradiation might be carried out either by interstitial radium or by deep X ray therapy. The X rays probably gave better irradiation of the apex, axilla, and supraclavicular region. Anæsthesia was unnecessary, but the treatment was more tedious than with radium. Irradiation of an inoperable growth by full doses sometimes made it operable, and the radiologist was often asked whether it was then safe to operate. Dr. Levitt held that it was perfectly safe if a complete radical operation was not contemplated. Removal of the breast was valuable after X ray treatment and should be undertaken wherever possible, even if the growth had completely disappeared and the patient appeared to be perfectly well. A breast which had once been the site of carcinoma was always a menace, by whatever means it was treated. These principles of combined therapy applied to the treatment of malignant disease in any part of the body. Dr. Levitt quoted the results of Coutard, Berven, Holthusen and Holfelder, and compared their practice in combined treatment.

Mr. G. F. STEBBING said that he always began treatment of carcinoma of the breast on the assumption that by irradiation alone he would be able to get rid of the tumour, and that the breast should only be excised when it was realised that irradiation by itself would not be successful. If when the patient was first seen the surgeon decided to operate, pre-operative irradiation could be given for a number of purposes. The first was to reduce the size of the tumour by killing the most radiosensitive cells, which were those most likely to lead to metastases. The second purpose was to render the tumour more mobile by reducing the amount of inflammation in the surrounding tissues. A third was to lessen the vitality of all the tumour cells so that any which were sown on the surface of the wound or squeezed into the lymphatic stream would have less chance of survival. Even a small pre-operative dose was better than none, but it was wiser to give such a dose as would kill off all those cells which could be killed off with the least damage. The best results were obtained by an adequate dose of X rays—in the absence of a radium beam to the breast, axillary and supraclavicular regions. Using 200 kv., some 4500 r should be delivered within three weeks to every part of the patient which was assumed to contain carcinoma cells. Skin reaction would make it necessary to postpone operation for about three weeks, but at the end of that time a radical operation might be performed The interval was well spent and if the tumour and neighbouring lymphatic glands were immobilised and there were no danger of pressure or squeezing the danger of metastases was very small. The healing of the wound was slower and skin grafting would not take for some two months after the operation. Post-operative irradiation should only be given on the assumption that the operation had left behind tumour cells and the operator must decide where they were It should only be employed in the breast region if it was likely to be really effective Local recurrences could be treated easily and successfully by radium The axillary and supraclavicular regions should be given a carcinoma killing dose after every operation for carcinoma of the breast. The term prophylactic should be completely abolished for it tempted to inadequate treatment of an area which should be left alone until disease was present

Dr J R K Paterson said that there were only two main possibilities to which importance should be attached. The radiation should act on sufficiently responsive growths in such a way as to produce lethal change either in the tumour before removal or in isolated fascia or cells of malignant disease after removal Alternatively post-operative irradiation should provide a lethal dosage over an area wide of the operative procedure but have no influence on the field of operation itself Both of these methods depended on the direct effect on the neoplastic cells in the area of irradiation and not upon a systemic effect Pre-operative irradiation might also devitalise malignant cells so that they would not take root if they were scattered, but this was seldom the explana*tion of the effect of pre-operative irradiation as* ordinarily given Either before or after operation irradiation must be given in such doses as were known to produce definite lethal changes in the type of malignant disease under consideration. No difference must be made between irradiation used as a pre operative or prophylactic treatment and as a direct therapeutic agent It must therefore be given as intensively as was humanly possible—between 3000 and 6000 r in three to six weeks Irradiation would only be of value in that type of case in which it had some curative value when used alone A lesion which was genuinely inoperable when first seen could not be rendered operable by irradiation unless it was at the same time fully cured and required no operation. An already operable lesion might be rendered more operable by clearing up sepsis and lessening growth by shrinkage Such a growth might appear operable but still be massively infiltrated; the surgeon who found that he could not remove it could not be rescued from the consequences of his misjudgment by his radiological colleague and the patient was worse off than he would have been if he had been treated as an inoperable case The general outlook must be that of radical excision and radical irradiation as two distinct methods Each method must be so thoroughly employed that it achieved in its own right a definite percentage of cures without leaning on the other The combined method achieved a summation of results rather than of effects

Miss Louisa Martindale cited her own figures of 246 cases of cancer of the breast to show the value of post-operative irradiation with X rays The ten year survival rate was higher among the patients who had had glandular involvement than among those who had not these were the cases in which she had used adequate X ray therapy The earlier cases in which she had used apparatus which she would now consider inadequate had seemed to give just as good results perhaps because she had continued the treatment longer than if she had been using a higher voltage Later she had found that 156 kv gave a more successful hardness of rays than higher voltages Adequate X ray therapy should always be given after every radical amputation Dr Martindale supported this assertion by consideration of the statistics of foreign clinics She had used pre operative treatment in some cases but only where the patient had been kept waiting for a bed. She quoted a case of an atrophic scirrhus in the right breast which had received intense and prolonged pre-operative treatment from Prof Coutard and afterwards undergone a small mastectomy to show how resistant this condition might be The tissues had seemed to have a subcutaneous œdema and the skin no elasticity living cells were found in many different areas It seemed therefore worth performing the radical amputation first wherever possible and following it by steady X ray treatment

Dr Douglas Webster quoted Bloodgood's opinion in favour of pre-operative irradiation saying that this treatment doubled the value of surgery The value of pre-operative irradiation was most clearly shown in borderline or inoperable cases If it could do so much in advanced cases it could probably do still more in milder and operable cases It could add about one-third to the value of post-operative irradiation and was perhaps particularly useful in malignant kidney

Dr M C Batten doubted whether deep X ray therapy would irradiate the far side of a large mass as thoroughly as the near side Rays from the million volt tube might do it, though they would probably pass clean through the tissues instead He advocated removal by efficient surgery followed by radium or X rays

Dr J E A Lynham declared that pre-operative irradiation could have no immunising effect on any growth which was not given direct irradiation He did not agree with Dr Paterson's surgical conception of post operative irradiation—a massive dose in a short period A certain number of cells often survived even in the periphery of the mass, where the intensity of the irradiation should have been greatest A sublethal dose continued over a period might cause some of the cells to die out but the patient's tissues had to be considered as well as the growth Excellent figures had been obtained in the days before high voltage therapy

Dr B W Williams quoted Bloodgood's figures for post operative irradiation In two series one of which received no irradiation and the other post-operative irradiation restricted to prophylactic treatment of the breast area and supraclavicular glands where no secondaries were apparent the total mortality at the end of three years was identical and the total recurrences in the irradiated series were slightly greater than in the controls

SECTION OF ORTHOPÆDICS

At a meeting of this section held on March 2nd with Mr B Whitchurch Howell, the president in the chair a discussion on the prevention and treatment of

Ununited Fractures

was opened by Mr A M A Moore He said that the problem of the ununited fracture was as serious to day as it had ever been in the past He had gone into the records of 60 cases of non union that had been treated at three London hospitals in the last ten years, the difficulty had been to obtain accurate records of their early management as 45 of them had been treated at some other hospital and had only presented themselves for final treatment with the non union established They had all been in patients, the fractures were of six or more months' duration, and fractures of the neck of the femur had been excluded from the series, since that problem could be regarded as solved In the first half of the ten years there had been 29 cases and in the second 36 In spite of the improved methods ununited fractures thus seemed to be more frequent The Wassermann reaction was positive in 2 of the 39 patients in whom it was performed, the fractures in these were of the clavicle and tibia No general factors could be established for the causation of non union One patient had been radiographed 45 times in 5 weeks, but as the fracture had also clearly been over extended by skeletal traction, this could not be blamed for the non union Radiological evidence of bone infection was found in 19 cases, 14 being in the first half and 5 in the second, 11 had originally been compound fractures and 8 simple Operations such as plating had been primarily responsible for non union in 13 out of these 19 cases, the smaller number of infected cases in recent years might be because fewer were now being plated There were also 20 cases shown by radiography to have been over extended for a prolonged period during the primary treatment, many others appeared to have been but proof was lacking The speaker's impression was that while skeletal traction was an extremely valuable method of extension it had been used without due care in many cases recently A short period of over extension was probably of great value in reducing deformity, but the weight employed should be considerably decreased as soon as possible He thought that the 5 cases of fractured phalanges had not been satisfactorily immobilised.

Mr R Broomhead said that the diagnosis of non union was based on movement and pain at the site of fracture when stress was thrown on it, and on sclerosis of the ends of the bone as shown in the radiogram He discussed the treatment of some kinds of ununited fractures by reconstruction and bone grafting, where shortening was immaterial the ends of the bone could be reshaped and fixed without a graft, but where maintenance of length was essential or removal of sclerosed bone had left a gap grafting was called for His choice of method of grafting was to use bone chips for spinal grafts, but in ununited fractures of long bones the periosteum, which was essential for success in that operation, was apt to be turned into fibrous tissue He thought that as large a piece of bone should be used for the graft as was compatible with the mechanical conditions present and that it should be firmly fixed When there was a gap he performed a sliding inlay graft and filled up the gap with chips, there was, however, the danger that the graft would snap When non union was persistent and associated with pain amputation might be advisable Operation on the humerus was made difficult by the musculospiral nerve, bone grafting of the femur was one of the biggest surgical procedures All his cases were fixed in plaster for three months and then given remedial treatment

Mr H A T Fairbank thought delay in union was as common now as it had been twenty years ago He thought the common causes of delay were local, not general, and that, in addition to imperfect immobility, faulty apposition and poor blood supply were causes He had seen the custom of splinting give place to mobility and massage, the two methods seemed to give equally bad results Many modern cases of delayed union were due to too early massage and movement, others to open operation without adequate screws or proper immobilisation Malposition was very important, he had been impressed by finding no suspicion of an attempt at union when operating on cases six months after fracture, and yet when put in apposition and plated for immobility the ends had united without delay He agreed with Mr Moore that over extension was a real risk and felt that students should not leave hospital with the idea that skeletal traction was the routine method of treatment although it was the best for fractures of the lower end of the tibia and fibula Callus formation and the amount of ischæmia might be important but the position was the deciding factor in choosing a course of action He preferred to operate before delayed union had passed into non union, grafting was commonly the best treatment, although an intermedullary peg was very useful for the humerus and femur He too feared the graft would snap Living autogenous grafts had advantages over all others It was a mistake to try to correct completely the deformity of fractured ulnar and radius Circular bands of wire were undesirable because of the risk of making weak spots in the bone

Mr G R Girdlestone said he believed the principal factor turning delay into non union was impatience A patient of his had had part of the upper end of the tibia excised and a piece of fibula put in the gap together with chips He did not know whether the fibula or the chips had been responsible, but he could believe in both so long as the case had adequate after-care Many cases would unite if the ends were freshened and brought together He had believed that grafting provided a certain number of cells and some scaffolding, but in one difficult case in particular it had failed. He had come to accept as a rule for cases of non union one that applied to amputation stumps—one should not be fussy repeated operations were to be avoided The patient should be put up in an ambulatory splint and told to go away for 6 to 9 months Bone developed some lack of response if repeatedly traumatised, and in that way differed from carpenters' material. The three essentials were immobility without circumferential pressure, intermittent end to end compression, and a good blood supply The failures, apart from sepsis, came from poor blood supply, and that was where drilling and opening up of sclerosed tissue played an important part He made a point of never raising the ends of the bones from their beds, for that meant that only one side could be approached at a time and two operations were sometimes necessary instead of one He had dealt with 9 cases of non union in the last five or six years and had had one failure

Mr K H Pridie pointed out that in the radiograms of femurs shown the fracture had in several instances been transverse, there was an inverse ratio between area of fracture section and the time taken in consolidation, but most people confused the terms united and consolidated He had only had one failure in union in 4000 cases Long bones, if healthy, readily united after fracture, and non union was due to treatment, the commonest cause was over traction, and after that inadequate immobilisation, which had stopped before there was consolidation, or when a plate kept the bone ends apart After comminuted fracture of the tibia with loss of bone, the fibula might unite early and separate the two ends of the tibia the fibula should then be divided to allow the fragments to come into apposition. To prevent non union fractures should not be left to house surgeons to treat traction should only be used to reduce the fracture once achieved the traction should be stopped and immobilisation be obtained by plaster for knee and arm fractures by fixed traction for thighs Skeletal traction should only be used for compound fractures it was difficult to overpull with strapping extension Compound fractures should be treated efficiently converting them into simple closed ones Fractures should be immobilised with function until there was consolidation Treatment of non union consisted of removing plates and foreign bodies If the bones had become sclerosed and indolent multiple drilling would reactivate the ends; this could be performed through a tenotomy incision Where there was a large gap the fracture should be exposed and a rotary saw used up and down the fracture site as well as drilling

Mr D McCrae Aitken thought the causes of non union were movement compression and lack of apposition —Mr E I Lloyd said that the patient should be walking as soon as possible He considered that union was liable to take longer than the three months mentioned by some authorities —Mr B H Burns had not had a happy experience of wire radiograms had shown definite absorption near it He was startled by Mr Fairbank s suggestion of steel plates when union had occurred in his cases it had done so at the point furthest away from the plate

Mr N St J G D Buxton had seen 24 cases of non union of the tibia in 8 years two were congenital fractures neither had united and one had been amputated; two in middle aged women had joined and 20 had had osteotomy performed on the fibula, both broken ends of the tibia being freed and cleaned and a bone graft was brought down. This, he considered, was the operation of choice; it allowed angulation to be corrected at the same time.

Dr J Duncan White thought complete immobility was essential for obtaining union. Even the 45 radiograms taken in five weeks mentioned by Mr Moore was not likely to be an overdose for the patient

The President said that he had found non union to be due in several cases to interposition of fibrous tissue Massive wide bone grafts with stripping up of the periosteum and freeing of the ends of the bone gave he thought the best results He had recently been using a deeper and wider saw The messier the operation the sooner union was obtained and the better the result He believed that metal had to be used sometimes for instance to save a limb with a compound fracture

Mr Broomhead in conclusion said that he used rustless steel wire but where a plate was also used the wire and plate should be of the same metal He agreed that skeletal traction was used too much He had noticed that particularly tall people and those with multiple fractures were more liable to non union he wondered whether there were some substance which influenced bony union and which expended itself in tallness and many fractures. Mention had been made of the increase of ununited fractures recently but of course there had also been more fractures altogether

MEDICAL SOCIETY OF LONDON

At a meeting of this society held on March 8th under the chairmanship of Mr W E Tanner a discussion on

Effects of Prolonged Dorsal Decubitus

was introduced by Mr G R Girdlestone. He said that, apart from renal stone the effects of prolonged dorsal decubitus were too indefinite to reach any index system of hospital record. He had had to rely on the investigation of a small group of cases on his clinical experience, and on the response to a questionnaire of a number of colleagues The effect on general health differed as between children and adults and in closed wards as opposed to open air wards where part of the body was exposed to the sun or to sky and wind for suitable periods every day The child in an open air ward in an orthopædic hospital was in better health than a middle class child in school or home. Adults did not tolerate prolonged dorsal decubitus well, and were less benefited than children by heliotherapy Adults usually stagnated after a time, especially if they were splinted The freer the body from control the more could the patient respond to the stimulus of the open air Opinions differed as to whether the shape of the thorax was altered by the decubitus two doctors mentioned some antero posterior flattening which should be countered by exercises and by the adoption of the ventral position Twenty cases taken at random all discharged for more than a year after periods of from one to eight years in a position of decubitus showed no abnormality in chest shape On vital capacity he had not been able to get more information than a general impression that it was not altered by prolonged decubitus Deformities in lower limbs was very much a matter of control partly by splintage and partly by nursing care Inadequate nursing might lead to clawing of the toes, genu recurvatum genu valgum and so forth and possibly fixation of a joint in a deformed position Pyæmic arthritis of the hip might progress to pathological dislocation in an insidious way In his orthopædic hospital the feet and ankles were as far as possible left free in cases of spinal and hip disease and they were given frequent periodical exercises controlled by the nursing staff Of 20 hospital patients recently examined who had been in dorsal decubitus more than a year 10 had slight pes cavus of 20 who had been out of the hospital for some time only 1 had cavus deformity and that only slight A few patients developed subastragaloid valgus of the foot the tendency of which was to cause flat foot but that was prevented by weighting the heel when the patient got up Splints devised to prevent deformity could, if misapplied cause deformity Lordosis could be brought about by unrecognised flexion deformity of the hip and it was almost impossible to correct this by passive movements Usually scoliosis had an organic cause; that resulting from infantile paralysis came on rapidly, and the deformity might catch one unawares

In open air wards the blood picture tended to become normal and in many cases that meant improvement Decubitus seemed to have no detrimental effect on the blood but patients lying on their backs for a long time seemed more sensitive than others to shock after a prolonged operation Mr Girdlestone s observations lent no credence to the idea that prolonged decubitus lowered the blood pressure Neither he nor his colleagues had noticed any abnormality in kidney function as a result of posture alone; but dorsal decubitus predisposed to renal calculi. Here there were two factors at work: posture and infection. When stagnation coincided with concentration of the urine, precipitation was likely to occur. Care about the intake of fluids and dehydration was needed, and a frame should be used for rotating the patient many times a day to aid the flow of urine from the pelvis of the kidney, in the gravitational direction. In 180 beds in his hospital perhaps 100 patients were in a position of dorsal decubitus; and in the last 10 years there had been only 8 cases of stone. In the last 5 years, during which specific measures of prevention had been operative, only 1 patient had developed stone. Early diagnosis of renal stone was very important, as treatment by copious fluids and frequent rotation seemed often to cause its disappearance. Renal stone had been attributed to a diet with deficient vitamin A and excess of vitamin D.

Bed sores were now very rare in orthopædic hospitals since the nursing staff understood the use of the frame, the plaster bed, and so forth. In the last few years only one case of persistent bed sores had occurred in his hospital, in a schoolboy with paraplegia following a spinal fracture. Lastly, Mr Girdlestone spoke of the effect on the mind of prolonged dorsal decubitus; this could be partly averted by cheerful lighting, the provision of games, and the promotion of good cheer.

DISCUSSION

Mr **JENNER VERRALL** said that the orthopædic surgeon tended to concentrate on the particular deformity, and might not notice the other features.

Mr **JOHN EVERIDGE** said that, as consulting urologist to the Carshalton Orthopædic Hospital, he had observed many cases of renal calculi associated with dorsal decubitus. In the war attacks of hæmaturia had occurred with stone formation in many patients after prolonged recumbency due to injury. In most of them urinary sepsis was present, and the most common organism was *B. coli*, though there were cases of *B. proteus* and streptococci; staphylococci were not as common as was expected. Hæmaturia with or without urinary sepsis was prone to occur in children who were kept on their backs; in girls it was difficult to avoid contamination following defæcation, the infection being an ascending one by way of the urethra. Stagnation caused by gravity must be a factor in the causation. In cases treated in the Trendelenburg position there was a tendency for stones to form in the high calyx; those children were never thirsty and it was difficult to get them to drink enough. They tended to become constipated, and the aperients given were sometimes too drastic, for violent action of the bowels promoted coli infection of the urinary tract. Disordered calcium metabolism was probably a factor, but in these children it was difficult to demonstrate hypercalcæmia.

Since heliotherapy led to perspiration and the loss of body fluid, these children were kept in the shade as much as possible. Many of the stones were painless, since they caused no obstruction. The prognosis was serious, but not so bad as might be thought. Often calculi, huge judging by the radiographic shadows, disappeared; these shadows were presumably not due to formed calculi, but to the silting up of what was called 'mud,' which disappeared when the patient resumed normal life. Formed stones also had been observed to disappear to some extent. These children were liable to sharp attacks of ureteric colic with great dilatation of the ureter due to secondary impaction of a stone. The methods at the Carshalton hospital had definitely lowered the incidence of stone. Most of the stones were mixed: ammonium, urate, phosphate, magnesium.

Mr **G. B. WOODD WALKER** thought it unlikely that gravity could make much difference to the emptying of the pelvis of the kidney. Recently a film was exhibited at the Royal Society of Medicine showing great activity of the pelvis of the kidney and the ureter. Man and animals could swallow "uphill," and he did not see why urine should not be passed, whatever the position or posture of the kidney. There was little evidence to support the idea that the upright position in man made any difference to the draining of the kidney. He agreed that there must be great stagnation in these patients, and decalcification must be an important feature.

Dr **G. E. VILVANDRÉ** remarked that in osteitis fibrosa there occurred a vast decalcification. He had seen the formation of calculi in cases of Paget's disease which were sent for an X ray examination because of urinary symptoms. In some of these he had seen not only calculi in the bladder but also evidences of Paget's disease. Decalcification could result from mere disuse. He had been interested to hear that calculi could disappear more or less spontaneously. Some elderly patients might give the impression, judging by the radiogram, that they had Paget's disease, but further investigation showed this was not so, as there was no bone softening, nor enlargement at the epiphyses; it was simply decalcification due to old age.

Mr **B. WHITCHURCH HOWELL** said he had a shock in 1920 when a young patient with double dislocation of the hip joint had developed hæmaturia a few weeks after commencing a course of reduction by treatment on her back. She developed renal calculi in both kidneys. He worked out, for the patient, a pelvic rest arrangement which kept her in the required position on a hinged support, which enabled gravity to act and the urine to be secreted downwards. Since he had been using that apparatus he had had no further cases of renal calculi and hæmaturia. In the old days patients were kept on their back so long that cardiac efficiency diminished, and probably blood pressure was reduced. Patients kept in an apparatus with a flexion of 30° had no cardiac inefficiency but increased respiratory movement, and they could pass urine naturally and in larger quantity. Many cases were now treated with the Bradford frame. This he had incorporated into a four-poster bed, and by its means a case of spinal caries could be turned through a quarter circle, so enabling the sun to play on the back or on the chest at will. These patients should have definite limb exercises supervised by the nurse, and much fluid to combat constipation. While making the X ray examination of the hip condition it was not unusual to find hard fæces in the pelvic picture. Psychologically, these patients had much to contend with. Recently their lot had been much improved by providing them with prismatic spectacles. An arrangement of mirrors would enable them to appreciate cinema pictures without getting into strained positions. The colour scheme of these wards should be made more restful with more mauve and subdued colouring. Very few of the occupants of orthopædic beds were supplied with proper tinted glasses.

Mr **A. SIMPSON SMITH** said he had treated a girl, aged 18 months, on a Hughes frame at an angle of 75°, and she developed severe bilateral pyelitis and otitis media which he and his colleagues attributed to her posture He agreed with what had been said about decalcification but he felt that gravity had as much influence in these cases. It seemed impossible that, against gravity a kidney by its contractions, could force urine 15 in into the bladder and keep it there Even in the decubitus position the kidney was lower than the bladder and the urine would leak back unless there was a very tight fit.

Mr F M. LOUGHNANE did not think the decubitus posture had much to do with the formation of stones. For a long time he was at the Hospital for Sea-Bathing at Margate, and he did not remember one patient there developing urinary symptoms or stone in the kidney unless in association with renal tuberculosis. As to the dehydration accompanying exposure to sunlight causing stones he was in Mesopotamia four years but saw only two patients with urinary calculus If a kidney could not secrete urine because the patient was on his back, and stagnation occurred, there should be hydronephrosis, and none of the pictures exhibited showed hydronephrosis When once formed, he did not think a renal calculus would disappear unless passed naturally

The CHAIRMAN said that in all cases of long standing infection it was possible for the pelvis of the kidney to be full of urates, which did not show on the radiogram He had a patient who in consequence of extensive suppuration of the type seen in the war had to suffer amputation of the leg just below the hip His night urine did not exceed 8 oz and the day urine 12 oz probably the kidneys had large uratic deposits in the calyces.

WEST LONDON MEDICO CHIRURGICAL SOCIETY

A MEETING of this society was held at the West London Hospital on March 5th under the chairmanship of Mr NEIL SINCLAIR when a discussion took place on

Diseases of the Colon

Dr A. F HURST discussed the symptoms in organic disease of the colon especially discomfort and pain for which the characteristic situation was the left iliac fossa. Any change of the normal bowel habit should be noted as suggestive of disease of the intestines and more commonly of the colon It was important to make a rectal examination and to examine the stools In Dr Hurst's view there was no such thing as mucous colitis The mere presence of mucus was not evidence of colitis it was normally secreted in persons taking aperients all of which acted as chemical irritants of the bowel. Mucus only indicated inflammation if it was present in a loose stool which was naturally produced that is, not the result of an aperient Colitis Dr Hurst continued began exactly like an ordinary dysentery In this connexion he pleaded for the use of the proctoscope by general practitioners With regard to carcinoma of the rectum and colon he believed that nearly all cases originated in polypi. Carcinoma of the colon might produce general ill health with no local symptoms, and this should be borne in mind when any person over 35 complained of general unfitness and nothing abnormal was found on general examination Occult blood should be looked for in suspicious cases. Pain in the left iliac fossa was often due to diverticulitis most sufferers from this condition could be treated medically and it was amazing how a diverticulitis might respond to medical treatment. The medical treatment was rest in bed, a non-residue diet, no aperient, and increasing doses of belladonna 6 oz of liquid paraffin might be given as an enema at night

Prof G GREY TURNER, speaking from the surgical side, said that occasionally the inflammatory condition did not remain limited to the bowel but caused localised peritonitis and a tendency to the development of internal fistulæ Surgeons were apt in a case of fistula between colon and bladder to attempt too much at a time If anything had been learned during the last ten or fifteen years it was the extreme importance of dealing with these things in stages For a communication between the large bowel and the bladder a preliminary colotomy should be the first step any larger measure only at a second intervention Diverticuli did not appear to be in any ancestral relationship to malignant disease though the two conditions occurred in the same types of individuals and at about the same period in life

Dr H W POST showed a large number of radiograms and discussed the two principal means of examining a patient—namely (1) a barium meal to estimate the physiological condition of the large bowel and (2) a barium enema, which showed the anatomical appearance and any pathological changes. Carcinoma of the rectum was rarely diagnosed by means of X ray examination.

Mr CECIL WAKELEY said that most carcinomas of the cæcum were not diagnosed until the tumour was very large They did not give rise to obstruction until an enormous growth overlapped the ileocæcal valve. A surgeon was apt on exposing such a tumour to consider it inoperable and to do a palliative ileocolostomy But later it would be found that it was no longer fixed, the fixation being due not to the growth but to the superadded sepsis When after colostomy the irritation disappeared, the growth became more mobile One of the most important things which had crystallised in surgeons minds was that in carcinoma of the colon multiple operations had to be done.

Dr MAURICE SHAW spoke of the condition known as spastic or hypotonic colon and its treatment by large doses of belladonna The other principle in treatment depended on recognition of its possible psychogenic origin; treatment must be largely a question of routine He had watched the treatment of colitis for some 15 years, and to his mind no very significant advance had been made apart from dietetic treatment It was most important to encourage the patients to take as full a diet as they could He felt there was some possibility of doing good by protein shock though he had found no benefit from serum therapy

Mr C F G BATCHELOR spoke on the desirability of performing colectomy in the presence of secondary growths in the liver In one case in which such growths were manifest he had done a colectomy and for two years the patient was quite comfortable When the patient returned secondary growths were found in the pouch of Douglas and the liver was not enlarged at all.

Dr GEOFFREY KONSTAM said that he was always hesitant about diagnosing spastic colon and nowadays with the accessory methods available some sort of confirmation was desirable. With regard to the use of belladonna if this treatment were pushed to the extent which Dr Shaw had suggested it would mean that the patient would not be able to read because of the paralysis of his accommodation would not be able to speak because of the dryness of his mouth, and would not be able to eat because of the drying up of the secretions of his stomach.

EDINBURGH OBSTETRICAL SOCIETY

AT a meeting of this society held on Jan 13th, with Dr DOUGLAS MILLER, the president, in the chair, a paper on the

Treatment of Placenta Prævia

was communicated by Prof JAMES HENDRY (Glasgow) and Prof. DUGALD BAIRD (Aberdeen) They began by reviewing the opinions expressed at a meeting of the society in 1925, when the same subject was discussed Cæsarean section was then thought suitable for a few hospital cases, but vaginal methods of controlling hæmorrhage and effecting delivery were given first place and no reference was made to the importance of making up the patients' blood loss From consideration of large series of cases there appeared to be a uniform international standard of maternal mortality for placenta prævia in the neighbourhood of 7 per cent , but limited series had been reported showing a much lower mortality, and the speakers felt that much better results could be obtained Ninety cases had proved fatal in the Glasgow Royal Maternity Hospital in the period 1925–34, death being due to hæmorrhage in 54 cases and sepsis in 36 Two groups were recognised (*a*) those reaching hospital in good condition, and (*b*) those arriving in poor condition The mortality was higher in the latter, it also increased with the degree of placenta prævia The following recommendations suggested themselves

(1) If possible, every case of placenta prævia should be dealt with in a maternity hospital or well-equipped nursing home, but if the patient is already collapsed a blood transfusion should be given in her own home before *she is removed, and for this purpose* a mobile blood transfusion unit should be organised

(2) The importance of warning hæmorrhages should be more fully appreciated

(3) Cases of antepartum hæmorrhage should not be examined vaginally except in circumstances that allow of efficient treatment being carried out at once, and then only by a person qualified to carry out such treatment

(4) The blood loss must be replaced by blood transfusion

(5) Cæsarean section should be considered far more frequently, for it offers a very satisfactory form of treatment

(6) The successful treatment of the placenta prævia requires *the coöperation of the general practitioner* and the hospital staff

If due attention were paid to these points a relatively small number of cases need be classified as "unavoidable deaths" During the last six years 228 cases of placenta prævia had been treated in Prof Hendry's unit with a maternal mortality of 2 7 per cent Where the placenta did not reach the internal os, and the patient was admitted in good condition, puncture of the membranes was carried out Occasionally in such a case, if bleeding had ceased and the child was very premature, expectant methods were adopted Where the prævia was central, or the placenta partially covered or reached down to the edge of the internal os, Cæsarean section was performed *in almost every case*, expectant treatment was never considered. The proportion of cases treated by Cæsarean section had risen to 64 per cent during 1936, the more frequent use of this *operation* had been made possible by blood transfusion, so that women arriving in poor condition could be safely operated on An efficient blood transfusion service had been established, most of the 200 donors living near the hospital Vaginal packing had been discontinued, except in grave emergencies Practitioners were encouraged to send all cases of antepartum hæmorrhage into hospital for diagnosis without themselves making a vaginal examination If the patient's condition was unsatisfactory a blood transfusion was given before any vaginal examination was made Version was used in only 8 cases in which the vagina had been packed before admission A consecutive series of 87 cases of placenta prævia had been dealt with on the lines described during the last *two* years with *only* 1 *death* (a mortality of 1 1 per cent), this death was due to the giving of incompatible blood The fœtal mortality rate in this series was 43 per cent , where *version* was *used it* was 81 per cent , where the membranes were ruptured it was 32 per cent , and after Cæsarean section it was 30 2 per cent

A group of 100 women who had had Cæsarean section performed for placenta prævia more than *two years previously* were re-examined so as to estimate the end results In 90 no abnormality was found and the general health was good In only 3 symptoms referable to the operation, probably due to adhesions, were present Of the 100 patients 54 had been sterilised, for many of them were over forty years of age and considered they had large enough families Among those not sterilised it was calculated there was a sterility rate of 8 7 per cent A group of women who had been treated by vaginal methods *in the same years as those who had* Cæsarean section was also examined as to end results Of these, 15 per cent were found to be in poor health, and the sterility rate was calculated at 18 per cent , so the *end results of Cæsarean section compared* very favourably with those of the vaginal methods The risk of subsequent sterility and of rupture of the uterus during pregnancy or labour was much *exaggerated*

HÆMOPOIESIS AND THE PITUITARY GLAND —Prof I Snapper of Amsterdam reports a series of five cases in which there appeared to be a direct connexion between disease of the pituitary gland and the functions of the stomach and bone marrow (*Ned Tijdschr Geneesk* 1937, 81, 265) In all the patients there were signs of a destructive lesion of the anterior part of the pituitary, associated with hypofunction, in one the X ray picture showed expansion of the sella turcica Examination of the gastric function revealed complete absence of hydrochloric acid in all the cases One patient, a man of 52, presented the typical blood picture of pernicious anæmia, to which, after five years, clinical signs of postero lateral sclerosis of the cord were added A second patient, a woman, had a hyperchromic blood picture (colour-index 1 27) without other abnormalities and without clinical signs of disease of the spinal cord In the *remaining three patients the blood picture* was normal, but examination elicited clear signs of combined sclerosis of the cord Prof Snapper points out that the gastric achylia in these patients, with insufficiency of the anterior part of the pituitary throws a new light upon the cases, of which a few have been reported, of so-called pseudotabes acromegalica (Sternberg) The connexion between the pituitary lesion and the nervous disturbances has never been *satisfactorily explained and the gastric achylia* appears to furnish the missing link Why this should be followed in some cases by alterations in the blood picture, in others by spinal disturbances, and in others by both, is not yet explained

REVIEWS AND NOTICES OF BOOKS

Clinical Heart Disease

By SAMUEL A LEVINE, M.D F.A.C.P, Assistant Professor of Medicine, Harvard Medical School Senior Associate in Medicine Peter Bent Brigham Hospital London: W B Saunders Co Ltd 1936 Pp 445 24s

IT is not practicable either in general or consulting practice to carry out an exhaustive clinical examination on every patient Probably the most efficient clinicians are those who exercise best judgment in a selective method of examination Dr Levine has borne in mind this principle in his clinical approach to the cardiac problems discussed in this book. He has stressed the importance of bedside methods rather than laborious special investigations in differential diagnosis The author's style is personal direct, and unusually readable Not only has he given full consideration to well known problems in cardiology, but he has also indicated in what direction further researches need to be planned and what are the mysteries still awaiting solution. Two interesting points are discussed regarding valvular disease: (1) the frequent association of high blood pressure with mitral stenosis in middle life, and (2) the common coexistence of angina with aortic stenosis; it may be that in each case the individual possesses a vascular vulnerability that exposes him to the risks of inflammatory as well as degenerative forms of cardiovascular disease. Dr Levine makes concise comments on certain recent advances in cardiological practice notably the indications for the Delorme operation in constrictive pericarditis, the treatment of chronic cardiac invalidism by thyroid ablation and the clinical features of pulmonary infarction The fever and leucocytosis in the last-named condition and the frequent absence of hæmoptysis and electrocardiographic changes are noted and the difficulty that may arise in differential diagnosis from cardiac infarction. The diagnosis and treatment of other acute cardiovascular emergencies also receive attention and among innumerable matters of practical importance mentioned are bronchial factors in cardiac dyspnœa the danger of the use of dyes for cholecystography in anginal patients and the clinical significance of systolic murmurs Dr Levine's work is not illustrated except in the terminal section on electrocardiography but it is well printed and produced.

1 Atlas of Radiographs

Third edition. By A P BERTWISTLE, M B F R C S Edin. London Henry Kimpton 1936 Pp 560 42s

2 Roentgen Interpretation

Fifth edition By GEORGE W HOLMES M.D Roentgenologist to the Massachusetts General Hospital and Clinical Professor of Roentgenology, Harvard Medical School; and HOWARD L RUGGLES M.D Roentgenologist to the University of California Hospital and Clinical Professor of Roentgenology University of California Medical School. Same publishers 1936 Pp 356 22s 6d

1 THIS book, which has now reached its third edition has been compiled, as the author points out by a clinician for clinicians and the material selected is naturally not the same as it would be in a work primarily intended for radiologists Common conditions are presented rather than rarities Great stress is laid on silhouette radiograms; probably too much importance is placed on their value. The plan of showing reproductions with a description of the condition on the opposite page is appropriate to a book of this kind for this method makes it easy for the student or practitioner to follow the different types of lesions described

Many of the radiograms are of rather poor quality and could with advantage have been replaced by more recent pictures Unfortunately from the student's point of view the radiograms are presented indiscriminately, with the left side on the left or on the right The diagnoses in certain cases would seem open to doubt. For example Fig 375 is described as an example of Albers Schonberg's (incorrectly spelled Scholenburg's) disease. In this condition the bone is dense The photograph is more suggestive of normal bone taken at too low a voltage In Fig 418 an ulcer is described as bearing radiating processes without further information one would be inclined to interpret this as the duodenal jejunal flexure In the chest section in Fig 628 it is said that the bronchial tree is very beautifully seen The radiating lines seen in the lung fields are now generally regarded as being due to blood vessels and not bronchi.

It is unfortunate that errors have been allowed to creep in to what is otherwise a useful book. In future editions the quality of the reproductions should be improved, and many of the diagnoses should be re examined.

2 Diagnostic radiology has become such an enormous subject that the authors in deciding to survey the whole field have found it impossible to give more than very brief consideration to abnormalities The statements made are however reliable and the subject matter is clearly set out In this edition several sections have been rewritten and many fresh radiograms have been added. The greater part is devoted to the commoner bone and joint diseases only brief mention being made of the rarer conditions In the section on heart and great vessels new methods of measurements are given; the section on lungs and the gastro-intestinal tract has been brought well up to date Pyelograms have been more widely used to demonstrate lesions of the renal tract. This whole subject has been compressed into twenty pages The quality of the reproductions is good and the examples chosen are typical. The book should not be regarded as a complete text-book, but it will serve as a useful and reliable introduction to radiology

Dental Surgery and Pathology

Third edition By T W WIDDOWSON L D S Dental Surgeon to King's College Hospital; and E W B WIDDOWSON L D S London: John Bale Sons and Danielsson Ltd 1937 Pp 724 35s

THIS book began in 1914 as a notebook for students and now it has expanded into a large work of over 700 pages It still retains the essential character of a notebook in being a compilation of knowledge from other sources set out as far as possible in tabular form. But a notebook of this bulk seems to miss the mark It is too big to be a guide or spur to the memory and yet lacks the organic unity of a formal treatise The student reading this book may collect facts but he will scarcely gain a coherent impression of his subject. As a work of reference however this book has a valued place especially in the libraries of those with sufficient knowledge to winnow out important information from that which is trivial or obsolete A special word of praise is due to the chapter on the treatment of irregularities of the teeth by Mr Russell Marsh, which provides an excellent *résumé* of the subject

Chronic Diseases of the Respiratory Tract

Diagnosis and Treatment By ELMER H FUNK, M.D, late Clinical Professor of Medicine and Therapeutics, Jefferson Medical College Revised by BURGESS GORDON, M D, of the Jefferson Hospital, Philadelphia London Humphrey Milford, Oxford University Press 1937 Pp 618 40*s*

THE revision of Elmer Funk's book was entrusted after his death to Dr Gordon, who has brought it up to date by the inclusion of recent work on thoracic surgery, pulmonary asbestosis, and so forth In general the book conforms to the usual pattern both as regards subject matter and arrangement, illustrations, mainly skiagrams, are numerous and well chosen Therapeutics receive more attention than is customary, the classified description of expectorant drugs and the mode of action of each being particularly useful In view of this it is surprising to find no more than a passing reference to postural drainage in the treatment of pulmonary abscess The authors insist clearly on the need for establishing adequate drainage in this condition and advocate bronchoscopic treatment in the acute stage followed, if necessary, by surgical intervention before the walls of the abscess cavity have become rigid

In the treatment of pulmonary tuberculosis due emphasis is placed on the need to continue bed rest for some time after the cessation of symptoms of activity In describing the maintenance of artificial pneumothorax the writers pay less attention to radiological control than we do in this country, they consider that "the safest range for intrapleural pressure is from minus 2 to plus 2" and do not appear to be concerned with the marked mediastinal displacement which occurs in certain cases even at these relatively low pressures

A Preface to Nervous Disease

By STANLEY COBB, A B, M.D, Bullard Professor of Neuropathology, Harvard Medical School, Psychiatrist in Chief, Massachusetts General Hospital London Baillière, Tindall and Cox 1936 Pp 173 13*s* 6*d*

Prof Cobb describes his book as "a preface, to start the student with a three dimensional orientation towards neurology and psychiatry—a brief, concurrent anatomy, physiology, and pathology" The early chapters deal with the anatomy and physiology of the autonomic nervous system, the pathways of sensation and the integration of movement and locomotion Then follow chapters on functional localisation in the cerebral cortex and consciousness and the "mind-body" problem After dealing with the anatomy and physiology of the cerebral circulation and the cerebro-spinal fluid Prof Cobb discusses the general and special histology of the nervous system, and the book ends with a consideration of epilepsy and the psychoses

The author's long experience as a teacher has enabled him to realise the difficulties of students encountering the complex subject of neurology for the first time, and he has succeeded in packing a surprisingly large volume of useful information into a short book Like the nervous system itself the book is well integrated Structure is explained in terms of function, and abnormal physical signs are interpreted as the expression of disordered physiology The exposition is clear and aided by useful simple diagrams and tables, and the list of references with which each chapter concludes will be of value to those who wish to know more of the subject In a few details the views expressed are not those generally accepted Few pathologists will agree that arterio sclerosis is a cause of intracranial aneurysm, or that paralysis agitans is one of the commonest results of focal arterio sclerosis The view that symptomatic herpes is due to a physiological disturbance and not to the herpes virus is nowadays against the weight of the evidence, as is also the statement that epilepsy is rarely inherited as a syndrome without the inheritance of other associated neurological disorders The attempt to include an introduction to psychiatry has not been altogether successful, for this is too large a subject to be adequately discussed as an addendum to an introduction to neurology Moreover, in dealing with psychological questions such as the "mind body" problem Prof Cobb betrays a bias not uncommon in pathologists, tending to regard a functional disorder as the manifestation of a minute but as yet unknown structural change But it is only certain details of this kind that are open to criticism In essentials the author has achieved his purpose, and his book should make a wide appeal to students

Introduction à la chirurgie genito-urinaire

BY Prof E E LAUWERS, Ghent University Paris Masson et Cie 1936 Pp 197 Frs 32

Dr Lauwers has already published introductory works, similarly planned on the surgery of the nerves, thoracic surgery, and plastic surgery No better description of the aim of this new volume can be given than that written by Prof Legueu in the preface "It is neither a treatise nor a manual for he deals with neither instrumentation nor technique. It is rather a general view of his subject, a bird's eye view of the pathology of the urinary system, and of the general principles that must be kept in mind in dealing with departures from health" Pascal, in writing to a friend, once remarked that his letter was too long, he had not had the time to shorten it Dr Lauwers has given himself the necessary time. He has included in his bird's eye view not only the whole of genito urinary surgery, but also conditions that are usually included under other specialties The book closes with a description of disturbances of menstruation and of sterility The chief question that rises to our mind after reading it is for whom is it intended? The title suggests that it is meant for the beginner, but the absence of those details on which examiners set such store will be a serious defect in the eyes of the medical student

Year Book of General Surgery, 1936

Edited by EVARTS A GRAHAM, A B, M D, Professor of Surgery, Washington University School of Medicine Chicago Year Book Publishers, London H K Lewis and Co, Ltd. 1936 Pp 831 12*s* 6*d*

AGAIN the author deserves congratulation upon this useful compilation The articles are well selected and extracted and cover the whole of general surgery All surgeons should have this book which makes reference easy and anyhow serves to recall to mind important contributions made during last year Few active practitioners will not find here accounts of progress which had previously escaped their notice Altogether an excellent annual.

THE LANCET

LONDON SATURDAY MARCH 13 1937

THE NEED OF A MEDICO LEGAL INSTITUTE

THE project of a medico-legal institute has now been long enough before the public to breed impatience at the delay in its initiation A year ago the Departmental Committee on Coroners presided over by the Master of the Rolls and manned by an impressive proportion of legal members, alluded to the institute as if it were already visible upon the horizon Envisaging it as a training centre for medico-legal experts and a focus of pathological research the committee was prepared to accept its diplomas and degrees as a very proper qualification for appointments to an official list of pathologists available for post-mortem examinations in connexion with coroners inquests Last June the Advisory Committee on the Scientific Investigation of Crime unanimously recommended the establishment of a national medico legal institute in London and sketched its scope and functions The recent republication in the *Medico-Legal and Criminological Review* of Dr W G BARNARD s paper on the subject with the comments of Sir BERNARD SPILSBURY Sir WILLIAM WILLCOX and others offers a practical scheme and brings the proposals to a point where decision and action need no longer be delayed

Three simple questions arise at the outset How much will the project cost ? Where will the institute be placed ? And what authorities will be responsible for its management ? To cover the capital expenditure on buildings and equipment Dr BARNARD hoped for a grant from the Central Government supplemented perhaps by contributions from the London County Council and other interested bodies Once this initial cost was over he had an excellent suggestion for meeting the annual cost The London County Council pays not less than £20 000 a year in fees for post-mortem examinations ordered by metropolitan coroners and for medical evidence given in their courts The Departmental Committee on Coroners advised higher statutory fees for this purpose in view of the superior attainments for the expert pathologists whom it wished to see employed If this recommendation received effect the annual sum would be so much the larger If the total could be pooled and made available for the proposed medico-legal institute the annual expenditure could reasonably be met therefrom and the institute by providing the expert services required would quickly justify its existence and embark upon a specific programme which could be afterwards enlarged at discretion It would be training skilled pathologists for official or other purposes it would aid alike the cause of general medical education and the essential needs of those who administer justice The site for such a centre, it has been sensibly suggested, should be near the main buildings of the University of London If it were possible to locate one of the London coroners courts under the same roof there would be educational and other advantages from the association Dr BARNARD is probably right however in not wishing to see the scheme of a medico-legal institute linked too closely to a municipal system of coroners courts

The government of such an institute is an interesting and by no means insoluble problem The marriage of medicine and law usually leaves one of the pair predominant Both must have their say The Bar Council and the Law Society must be persuaded to make their contribution along with the bodies which represent surgery and medicine The Home Office will be keenly interested and although a too official atmosphere might not be healthy the invisible resources of the Privy Council might be called upon in the organisation of the scheme especially if a Royal Charter be sought The local authorities of London have their part to play It is understood that the University of London may not be unwilling to recognise the institute as a teaching school and to create in it a chair of medical jurisprudence There is a mass of detail to be worked out but the principle is both acceptable and accepted The time is ripe The omens are favourable Who will take the first step ?

ACUTE INTESTINAL OBSTRUCTION

THE fatality of high intestinal obstruction has long been a mystery for it is obviously not starvation that reduces a previously healthy person or animal to a moribund state in the course of a few days The ease of the experimental attack and the importance which would be attached to its solution have led many investigators to tackle the problem but none of their theories have really stood the test of time and criticism For a number of years toxins were thought to be the lethal factors Then with the advance of biochemical knowledge the importance of the loss of extracellular fluids and electrolytes began to be appreciated The ability of saline infusions to prolong the life of animals with obstruction supported the view that the real cause of death was extracellular dehydration For a time indeed the riddle seemed to have been answered but there were always a number of findings that were not explained by a simple loss of extracellular fluids When histamine was discovered and its pharmacological properties explored, there seemed to be a chance of satisfying the experimental and clinical demands by combining the two theories and naming histamine as the toxin , but it soon became evident that this was not to be A factor was still missing

It has been known for some years that one of the features of experimental and clinical Addison s disease is a rise in the serum potassium and the importance of this was much emphasised by the publications of 1030 Attracted by the many common features of Addison s disease and acute intestinal obstruction, a group of New York investigators[1] performed experiments on cats and are able to show that in these animals high intestinal obstruction is accompanied by a rise in the blood potassium to levels that they regard as lethal This is a definite advance in knowledge and if the experimental findings are confirmed in other animals, and particularly in man, a real step forward will have been made

One always hopes that new knowledge will lead to an immediate advance in therapeutics It must be admitted, however, that unless the administration of the suprarenal extract "cortin" will do the trick, the emergency physician or surgeon is likely to find the lowering of serum potassium almost as difficult as the removal of hypothetical toxins

AMŒBIC DYSENTERY IN CHICAGO

LIKE pilgrims to the holy city of Benares, eight and a half million people visited the "Century of Progress" exhibition in Chicago during the summer and autumn of 1933 They made epidemiological history, for at a cost of about a hundred lives they proved that amœbic dysentery could occur as an extensive water-borne epidemic in a civilian population The report on this epidemic now issued[2] is comprehensive and deserves the close attention of epidemiologists and protozoologists Briefly, the investigations of the board of health and the division of water purification of the city of Chicago and the U S Public Health Service appear to have established the following facts Two hotels, whose water supply was partly in common, were the source of the outbreak, and two major sanitary defects were found In one hotel cross connexions were discovered between a sewer and discharge pipes of condenser-water which, after being used for cooling, was distributed to the hotel and to the upper floors of the second hotel in certain conditions of overloading of the sewers and heavy rain this water might become polluted by backwash up the pipes Secondly, in the same hotel, leakage round a rotting wooden plug in an overhead sewer could contaminate a cooled drinking-water tank below

In the previous eight years 232 cases of amœbic dysentery had been reported to the Chicago board of health Of these, 8 6 per cent were subsequently traceable to the two hotels, and an investigation in 1926–27 had shown a carrier-rate of about 5 per cent in their employees Of the 1409 cases reported during the 1933 epidemic, 1050 were among guests or employees of these hotels, and during the epidemic itself the incidence of carriers among the employees rose to 37 8 and 47 4 per cent, with a corresponding risk of pollution of the water supply As was to be expected from the nature of the disease there was a long latent period—averaging over three months—between exposure to infection and notification of the illness to the Chicago health authorities The incubation period varied greatly, being most commonly about a fortnight, in a quarter of the cases it was 11 days or less, in a quarter, 12–20, in a third quarter, 21–36, and in the remainder 37–120 The delay in recognising the outbreak was increased by the scattering of the visitors to their homes and difficulties in diagnosing a comparatively rare condition Not more than 20 per cent of cases were correctly diagnosed before it became generally known that a large epidemic of amœbic dysentery had occurred, and the absence of the characteristic diarrhœa and of *Entamœba histolytica* in many cases added to the difficulties An acute onset with fever and abdominal symptoms led to a diagnosis of appendicitis in 16 per cent of the patients who afterwards died, and the fatality-rate in the 32 cases treated by appendicectomy was 40 per cent The most common erroneous diagnosis in the fatal cases was malignant disease, usually of the rectum After a correct diagnosis had been made, the results of specific treatment were very satisfactory indeed the response to a therapeutic test is of great value in establishing the diagnosis[3] The chief interest of the outbreak naturally lies in the epidemiological investigations, which were exhaustive A curious feature was the absence of the enteric fever and diarrhœa usually associated with water borne epidemics The explanation *suggested* is that the chlorine content of the Chicago water supply suffices to prevent survival of bacteria, but not of cysts In a later outbreak among firemen at the Chicago stockyards in 1934,[4] in which the water consumed had escaped chlorination, amœbiasis, enteric and gastro intestinal disorders were all noted Control of the outbreak was attempted by elimination of carriers of cysts from the food handling staffs, but there was no evidence that these efforts were successful However the authors add a caveat "that the experience in this respect is not to be regarded as an indication either of the value or lack of value of the procedure under some other conditions"

By this unique epidemic a new hazard to civil populations has been revealed The United States of America has led the way in personal hygiene and the careful protection of food and drink, *but* the Chicago outbreak of amœbic dysentery shows *that in the end it is sanitation which counts, and* that, as has been consistently taught in this country, an unpolluted water supply must always be the first line of defence Although there is less likelihood of any similar outbreak here, carriers are well known to exist,[5] and one lesson to be learnt is that especial sanitary vigilance is needed in connexion with all water-borne diseases at times—e g, in London at the coming Coronation—when accommodation is strained and weak points in a sanitary system are most likely to be revealed

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[1] Scudder J, Zwemer, R L, and Truszkowski R Their report appears on p 74 of the first issue of a new monthly journal named *Surgery* edited by Alton Ochsner (New Orleans) and Owen H Wangensteen (Minneapolis) and published by the C V Mosby Company St Louis U S A In this country the subscription price of the journal is 42s per annum post free (single copies 4s)

[2] Epidemic Amebic Dysentery The Chicago Outbreak of 1933 National Institute of Health *Bulletin No 166* U.S. Treasury Department Washington 1936 Pp 187 20 cents

[3] McCoy, G W and Hardy A V (1937) *J Amer med Ass* 2 1307

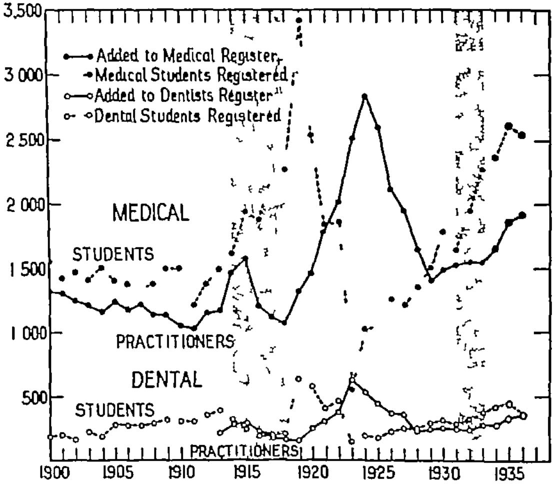
[4] Hardy A V, and Spector B K (1935) *Publ Hlth Rep, Wash* Reprint No 1676

[5] See *Lancet* 1934, 1, 46

ANNOTATIONS

THE TURN OF THE TIDE

The total entry of students in the medical schools of the United Kingdom and the Irish Free State, as indicated by the numbers registered[1] by the General Medical Council rose steadily (with one trifling exception) during the years 1923–35. The earlier part of this rise was no doubt the mere rebound of the unparalleled entries of 1919–20 but when the pre war norm had been reached in 1930 the rise still continued running closely parallel to the rise in the years 1916–20. The increased entry of 20 years ago was of course related to the war as is shown on the graph in which the period 1915–18 is indicated by a grey band. Last year Sir Norman Walker remarked that in the experience of the Council when trade is bad entries of medical students go up and vice versa. We have accordingly indicated on the graph by a second grey band as a criterion of trade depression the three years in which the average level of unemployed males stood above two million leaving our readers to correlate the two records at their discretion. In 1936 the number of registered medical students was 2544 the decrease of 50 being the resultant of a decrease of 82 in England and 0 in Ireland counterbalanced by an increase of 32 in the Scottish entry. Scotland had in fact the highest entry recorded since 1919 but it is fair to recall the abnormal flow of foreign medical students to Edinburgh as a result of the troubled situation in Central Europe. The Irish entry which has dropped only by a little during the last two years is still as great as in any year since 1920 bearing testimony to the existence of medical reciprocity between Irish Free State and United Kingdom far more real if less documented than the reciprocity with two foreign states. The numbers added to the Medical Register depending as they do on the students entry of five or six years before are still rising: 1905 last year as compared with 1882 in the previous year an increase of 23 small compared with the previous increase of 218 and both in England and Scotland the number has fallen appreciably. That brought the number of names on the Medical Register at the last day of 1936 up to a figure of 59 010. The turn of the tide must bring a sense of relief to British medical schools all of which are as Dr Stanley Barnes remarked a short time ago in Birmingham filled to the limit of capacity. For the first time in the history of the Birmingham school it was found last year impossible to accept some local applicants for places and Dr Barnes foresaw a time in the near future when only matriculated students taking a degree course could be accepted at Birmingham. The decrease is not large enough to give immediate relief nor in Sir Norman Walker's words, will there be any tendency to lower the standard of entry even if numbers do go down a little. The Dentists Register tells rather a different story 470 names were added to that register during 1936 an increment of 133 or 40 per cent on the previous year and far the highest entry since 1925 when there was still a large influx of practitioners registered under the Dentists Act of 1921. Less satisfactory is the decrease in the *number* of students starting on a dental career: 356 in 1936 compared with 436 and 422 in the previous years. This is an entry which may well be regarded by the Dental Board as inadequate to replace the probable wastage of the next decade.



SUSCEPTIBILITY TO RESPIRATORY INFECTION

It is the general experience of mankind and of their medical advisers that the incidence of colds coughs and more serious respiratory infections is by no means random. Some unfortunates seldom survive a winter and early spring without repeated attacks, while a happy few appear to be largely immune. Any observations that serve to throw light on these individual variations in susceptibility are welcome and a series of experiments reported[1] by Dr A Locke from the institute of pathology of the Western Pennsylvania Hospital offer suggestions that clearly merit further study. A series of rabbits were chilled until their rectal temperature had fallen to 95–96° F and a note was made of the time taken to recover 3° in temperature. This was found to vary over a wide range from about 20 minutes to about 125 minutes. Each rabbit was given a rating assessed by dividing 20 by the time actually taken for this temperature recovery. Thus a rabbit that recovered 3° F in temperature in 20 minutes was awarded a rating of unity while one that took 125 minutes was rated as 20/125 (0 16). When an adequate number of rabbits had been rated in this way, one sample of animals were tested by the intravenous injection of a small number of virulent pneumococci, while another sample were subjected to the more severe test of intradermal inoculation Thirty-six rabbits were injected intravenously Of these, 12 had been given a rating of over 0 6, 1 died Of 13 rabbits with a rating of 0 5–0 6, 4 died. Of 11 rabbits with a rating of less than 0 5, all died Fifty one rabbits were injected intradermally Of 16 with a rating over 0 6, 9 died. Of 19 with a rating of 0 5–0 6, 17 died. Of 16 with a rating of less than 0 5, all died. The author then turned his attention to human subjects Sixty eight persons—men, women, boys, and girls—were rated by a different method They were put to work on a machine resembling a stationary bicycle, and their oxygen consumption per minute, per square metre of body surface, was determined during maximal effort After rating they were kept under observation for seven months, and the number of colds contracted by each subject was recorded It was found that those subjects with a high rating developed far fewer colds than those with a low rating These observations are too few to be decisive, but they are at least suggestive

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[1] The Medical Register for 1937 (21s.), The Medical and Dental Students Register for 1936 (1s. 6d.), The Dentists Register for 1937 (1 s.) all published for the General Medical Council by Constable and Co., Ltd

[1] Locke, A (1937) *J Infect Dis* 60 106

SCHISTOSOMIASIS OR BANTI'S SYNDROME?

We have noted [1] that an illness which seems to be beri beri may in fact be caused by small intestinal trematodes of the family heterophyidæ There is now reason, coming from the four continents, for suspecting, in some at least of the instances of Banti's syndrome, an infection by blood trematodes of the genus schistosoma As Prof Enrico Greppi has pointed out,[2] Banti's view was that in his syndrome the spleen was fibrotic (a fibroadenia pure *and simple is the term used by Greppi*), but Greppi himself reported that in the syndrome as seen by him in Southern Italy and Sicily the spleen was certainly not in a state of pure fibrosis since it lessened in size after the injection of adrenaline He went on to say that E Bucciante, using in Alexandria on persons with splenomegaly from Mansonian schistosomiasis the same tests as Greppi had used in Italy and Sicily on those diagnosed as Banti's syndrome, had had the same findings These findings were an increase in the total plasma—held by Greppi to be a hyperplasia, not a temporary hydræmia—which was still present after splenectomy, a real decrease in red cells after making all allowance for the increase in plasma, no evidence of hæmolysis, and splenic contraction after adrenaline In the *China Medical Journal* for December, 1936, there is a symposium on schistosomiasis, and in it H E Campbell says that the pathological reports he got from two different laboratories on enlarged spleens from persons living near Foochow, Fukien, were consistently "Banti's disease" R C Robertson urged on him that before accepting this diagnosis he must rule out schistosomiasis, and while Campbell was hesitating to settle this during life by removing a piece of liver when taking away the spleen—in fear that this would add to the risk of an already severe operation—he had a visit from Prof H H Loucks of Peiping, who showed him how it might be done simply and safely Of portions of 6 livers of those with this condition (4 taken at biopsy and 2 at autopsy) schistosome eggs were seen in 3—a report which should be put beside that of H B Day [3] on 5 splenectomies for "*Egyptian splenomegaly*" during which he made a small liver biopsy, schistosome eggs being present in all of them Lastly, writing of advanced Mansonian schistosomiasis as seen in Porto Rico, R M Saurez and C M Gautier [4] say of 10 persons, whose sternal marrow they examined after aspiration, that they had splenomegaly and evidence of liver cirrhosis, and that clinically and hæmatologically their condition was indistinguishable from Banti's syndrome Clearly before falling back on this obscure diagnosis in the future, the question of schistosomiasis and its probably hopeful treatment will have to be seriously considered

THE TILT TEST

The functions of the various organs concerned in equilibration are difficult to understand Various attempts have been made to elucidate them, of which that devised by J Tait and W J. McNally of Montreal, however, and described in a series of papers *published during the past ten years, is the study of* an experimental animal deprived of the organ concerned. The success they have achieved in unravelling the complicated inter relationships of the semicircular canals and utricles is largely due to an operative technique whereby, under a dissecting microscope and using a dental drill, they have been able to divide the nerves to each canal, utricle, or saccule without any damage to other structures Dr McNally, in a demonstration to the section of otology of the Royal Society of Medicine on March 6th, described some of the results of these researches, and showed films illustrating the methods by which these results had been produced and analysed

The point of chief importance was the use of the tilt table in testing the reactions of the labyrinth, with a plea for its more common employment in clinical tests If an animal minus its utricles is tilted quickly out of the horizontal, an over compensatory action of the body musculature is produced, and, by further ablations it was shown that the vertical semicircular canals are responsible for this effect By converse experiments, the utricles were found to act by throwing the body further in the direction of the tilt, thus toning down the reaction of the semicircular canals Slow tilting affects the utricles only, and the reaction is compensatory It is not brought into play until some definite movement of the head occurs Thus slow *tilting of the utricles in a certain direction* produces the same effect as rapid tilting of the semicircular canals The two structures are connected in the brain with the same muscle groups, as shown by the similarity of the responses, and by studying the posture and reaction pattern of the muscular reactions in a frog, the exact labyrinthine lesion can be diagnosed. Dr McNally discussed the phenomena in man of nystagmus, past pointing, head turning, and falling, and showed that these movements are really compensatory, similar to the protective movements which resist a sudden tilt This is seen more clearly by tilting the patient when he is on all fours The arms then resist the tilt by buttressing When in the erect posture, the arms resist the tilt by swaying to alter the position of the centre of gravity, much as a tight rope walker uses his pole, and this *movement is away from the direction* in which the patient feels he is falling, but in the same direction as the other compensatory reactions such as head turning Dr McNally believes that if more complete knowledge of the various characteristic reaction patterns of the body musculature on tilting becomes available, the same exact diagnosis of labyrinthine lesions will be obtainable clinically as is now possible in the laboratory The tilt test is simple, and the reactions elicited by it seem to merit study

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[1] *Lancet* 1935 2 1015

[2] Greppi F (1934) *Minerva med Roma*, Nov 10th (No 45)

[3] Day H B (1924) *Trans R Soc trop Med Hyg* 18 121

[4] Saurez R M, and Gautier C M (1936) *Bol Asoc. méd P Rico* No 12 p 301

A COMMUNITY TUBERCULOSIS SURVEY

WITH the support of the Norwegian National Association against Tuberculosis Dr G Hertzberg has recently conducted a community survey of two rural parishes in Norway[1] Thanks to preliminary propaganda and the provision of adequate facilities for expert examinations he succeeded in netting about 50 per cent. of the whole community between five and six thousand persons of all ages being tuberculin tested (Pirquet and Mantoux) and the positive reactors being further examined by the sedimentation test as well as radiologically The radiological examinations consisted of screening and when its findings were positive or ambiguous, of radiography A portable radiological outfit enabled Dr Hertzberg to screen some 200 persons daily at the rate of 30 to 40 per hour and hustling though this rate was comparisons of the findings showed that screening was but little inferior in accuracy to radiography Altogether 120 cases of pulmonary tuberculosis were recognised as such for the first time by this comb-out and in as many as 90 of these cases the disease was caught at an early stage. It was not a little remarkable that 7 cases of pleurisy with effusion were discovered in persons unconscious of being ill The cost of this survey worked out at about 7000 kroner or about 1*s* 3*d* per head It may be noted in passing that such community surveys are at present being conducted systematically in Finland by its National Association against Tuberculosis which has recently equipped itself with 11 portable radiological outfits Dr Hertzberg's stimulating and instructive demonstration is likely to be repeated many times in many places

CEREBRAL ABSCESS

THE treatment of a cerebral abscess is perhaps the hardest task of the neurosurgeon. Accuracy in localisation good judgment as to the moment for operation and critical and untiring attention to post operative details are essentials for success It is widely accepted that radical operation should be deferred if possible until the acute inflammatory reaction has subsided, and until a firm abscess wall has formed During this process however the intracranial pressure may rise sufficiently to endanger life, and various procedures have been recommended to tide the patient over this period based on simple paracentesis of the liquefying area of brain Opinions differ about the correct course to adopt when a well localised abscess has formed Total enucleation is practised by some surgeons others prefer to drain the abscess through a small opening in the skull so as to avoid a fungus cerebri If the abscess is quite superficial success usually follows drainage through an adequate opening in the overlying skull but a much more difficult problem is presented by an abscess lying more deeply in the hemisphere. Operation here carries a grave risk of infection of the superficial healthy brain and of the overlying leptomeninges whereas with a superficial abscess the leptomeningeal spaces are obliterated by adhesions before operation is undertaken For these deeper abscesses E A. Kahn[1] recommends a modification of the King technique relying on a two-stage operation to allow the abscess to migrate nearer the surface, and to obliterate the pia arachnoid spaces by adhesions The abscess is located by exploring with a blunt needle without piercing the wall. A wide opening is made in the skull immediately over it and the dura freely incised Iodoform gauze is packed over the exposed brain and the incision is left open The second operation is carried out several days later when the endothermy loop is used to remove the fungus which has formed The abscess which will be found flush with the skull, is opened and its cavity packed with gauze The intracranial pressure gradually extrudes the remains of the abscess and the packing. Three of four cases treated in this manner recovered Kahn reports these cases in detail which makes his paper the more interesting

VENEREAL DISEASES AND MARRIAGE

IMPROVED means of recognising latent venereal infections have served rather to expose past deficiencies than to simplify the standards by which the cure may be determined. The difficulties are such that the most careful investigation does not remove all uncertainty and the subsequent marriage of the infected patient is never without risk to the marital partner In permitting marriage the physician takes a very serious decision and his natural anxiety is sometimes interpreted by the patient as an admission that the particular disease is incurable. In fact this view is held by many laymen and by some medical men with regard to both syphilis and gonorrhœa. In a review of this difficult and important subject Wolbarst[2] expresses his opinion that there is nothing inherently incurable in these diseases but that they often remain uncured through the fault of the practitioner of the patient or of both. For his own patients with syphilis who wish to marry he demands rigid standards which include 2–3 years continuous combined treatment with the arsphenamines and with bismuth followed by 1–2 years close observation with periodic examination both clinical and serological, to exclude recurrence Tests of the cerebro-spinal fluid must be negative a year after the cessation of the treatment Marriage is permitted to the patient with persistently positive serum tests after prolonged and intensive treatment provided there is no clinical evidence of neurosyphilis and tests of the spinal fluid are negative. Wolbarst throws doubt on his own criteria of cure however by advising that observation should continue for 4–5 years before procreation is considered. There must be evidence that during this period the infected patient has remained clinically and serologically negative and has not transmitted the disease to the partner in marriage He advises that the prospective mother should receive antisyphilitic treatment throughout pregnancy irrespective of which marriage partner was previously syphilitic and if both man and wife have been infected he would have them both permanently sterilised even though treatment may seem to have been fully successful. All patients who have had syphilis are urged to undergo a brief course of treatment once or twice yearly throughout life as an insurance against recurrence To exclude latency of gonococcal infection Wolbarst demands searching clinical and bacteriological examination with repeated tests over a period of several months The presence of numerous leucocytes in the prostatovesicular fluid is taken as evidence of probable infectiousness, but he believes that the most efficient single test is the examination for gonococci of the semen, or prostatovesicular fluid obtained by digital massage, by microscopic and cultural methods He doubts the value of the complement fixation test for gonorrhœa in the blood serum as a test of cure

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[1] *Norsk Mag for Lægevidensk* February 1937 p 2 4

[1] *J Amer med Ass* Jan 9th 1937 p 87

[2] Wolbarst A L (1936) *Brit J ven Dis* 12 229

While many will not accept these views in their entirety they give a fair indication of the doubts and the hazards that arise It seems that the most rigid precautions will sometimes result in disastrous transference of infection to innocent persons with resulting loss of health and happiness and possible transmission of infection to the next generation It is certain that these responsibilities are sometimes too lightly undertaken, and that even the most elementary precautions are often omitted

THE FACTORIES BILL AND MEDICAL PRACTICE

THE Factories Bill which was introduced by the Home Secretary in the House of Commons on Jan 29th, and read a second time without a division on Feb 15th, is still being considered in Standing Committee We have already dealt in a leading article (Feb 20th, p 451) with the vital question of the adolescent in industry It may now be useful to summarise the changes which the Bill, if it is passed into law in its present form, will make in the work of doctors who are wholly or partially engaged in industry The position of the whole time industrial medical officer remains substantially unaltered except that under Section 11 the Secretary of State may make special regulations for the medical supervision (not treatment) of persons employed at a factory in certain circumstances which have caused or appear likely to cause ill health Temporary arrangements for such supervision may be made without waiting for the inquiry which must precede the issuing of a special order It is possible that this section will provide the foundation upon which a more efficient medical service for industry may be built

Again under Section 119 (3) the Secretary of State may authorise a medical practitioner who is employed by the occupier in connexion with the medical supervision of the factory to act as an "examining surgeon." The appointment and conditions of work of this officer are set out He is to be appointed by the chief inspector (or his district deputy) who also has power to revoke the appointment Appeal against the appointment or against the revocation of an appointment may be made to the Secretary of State No practitioner directly or indirectly interested in any firm can act as an examining surgeon for that firm, except that a medical man employed by a firm may be employed as an examining surgeon if he is authorised by the Secretary of State to do so This proviso raises a point of more than academic interest The examining surgeon from the terms of his appointment is a subordinate official of the Home Office medical staff A medical man employed by a firm might lack (in certain circumstances) that measure of independence and freedom which is essential for the proper discharge of judicial or semi judicial duties The other duties of the examining surgeon are to make such examinations and reports as the Secretary of State may direct, to make an annual report, and to carry out certain duties under the Compensation Acts Upon the question of fees the Bill is silent, except that it provides that they shall be paid by the employer and be determined by the Secretary of State (or by agreement between the surgeon and the employer) Most of the criticisms, just and unjust, which have in the past been levelled against the existing certifying factory surgeon's work have been due to his inadequate remuneration Unless there is improvement in the rate of fees paid for these examinations the other alterations in medical work proposed in the Bill will lose much of their value Under Section 69 the examining surgeon may be called upon to report on accidents and poisonings in industry If full use is made of these powers the surgeons will gain an insight into working conditions which otherwise may be denied them Special examinations of this kind should provide a new source of information about industrial disease and accident

Section 92 governs procedure for the examination of young persons Power is to be granted to the surgeon to issue provisional certificates of fitness (up to 21 days), to call for the re examination of young persons (when necessary), and to request the medical officers of the local education authority to provide confidential reports on the past medical history of young persons in doubtful cases Inspectors are to have power to order the suspension (subject to re examination) of any young person who appears to them to be unfit for the particular work which he or she is doing Moreover power is given to the Secretary of State to prescribe the facilities which must be provided for the carrying out of these examinations It will be seen that in these respects the Bill marks a real advance upon existing conditions of medical work in industry It is essential that the provisions designed to protect the examining surgeon both in his appointment and dismissal should be strong enough to preserve that measure of independence which is necessary to his efficiency

HERMANN KÜMMELL

GERMAN surgery is the poorer for the death on Feb 21st of Prof Kümmell, who occupied for many years the chair of surgery at Hamburg Born in 1852 at Corbach, he qualified in 1875 and in 1883 became associated with the Hamburg Eppendorf Hospital After 36 years of service there the Hanseatic city at last made up its mind to have its own university and Kümmell was chosen as the first professor of surgery His writings cover almost the whole field of surgery and make an impressive list Although in this country his name is associated mainly with the spinal disease that bears his name, abdominal surgery claimed much of his interest In 1890, when appendicitis was still known as peri typhlitis, he was writing about its radical cure Eight years later he was counting 104 recoveries after appendicectomy, and in 1905 he had an experience of 1000 operations He wrote largely on genito urinary surgery, particularly in relation to prostatic enlargement, other subjects he touched ranged from Volkmann's ischæmic contracture to injuries of the *thorax and resection of the colon* "Kümmell's disease" is a late sequel of spinal injury characterised by increasing kyphosis and pain referred along the distribution of the spinal nerves In his original description he attributed these symptoms to disturbance of the local circulation as the result of a rarefying osteitis followed by collapse of the vertebral body Nowadays most of such cases are regarded as compression fractures of the vertebral bodies, which, in the absence of radiological examination, have remained unsuspected, until pressure has caused a slow collapse of the cancellous bone with compression of the emerging spinal nerves

Pott's disease is excluded by X ray evidence of intact vertebral discs and by the absence of suppuration The affected vertebral bodies are typically wedge-shaped Treatment of Kümmell's disease is directed either to the reduction of the deformity by hyperextension followed by fixation in plaster-of Paris, or when that is impracticable to spinal fusion Fusion should include one or two vertebræ above and below the lesion the spinous processes are split and slivers turned up and down to meet slivers from adjacent spines The articular cartilage is sometimes removed from the intervertebral joints and the fusion may be strengthened by insertion of tibial grafts

OBSTETRICS AND THE PREMATURE BABY

PÆDIATRICIANS have been showing a greatly increased interest in the care of the premature baby and in certain centres such as Chicago [1] an intensive campaign has reduced the mortality C H Ingram however writing from the department of obstetrics of the Western Pennsylvania Hospital,[2] calls attention to certain facts which suggest that the obstetrician must not feel satisfied because the pædiatrician has now stepped in He shows that four fifths of the premature babies die in the first two days of life and in his opinion feeding and kindred nursing problems managed now as never before in many institutions cannot be expected to have much influence on these He therefore proceeds to analyse various factors causing death in this period. He found that multiple pregnancy has the lowest mortality rate spontaneous labour coming next There is a relatively higher mortality in the small group of babies prematurely born of mothers with some form of toxæmia of pregnancy while, of course, maternal bleeding yields the highest infant mortality Turning to the type of delivery it was found that of 52 forceps cases only 17 died, the lowest mortality for any method and in contrast with the results in 203 spontaneous live births with a loss of 113 babies Still higher mortalities were found in 23 versions and in 51 breech deliveries. It is concluded from these figures that forceps delivery is the best method for helping the premature baby and in the toxæmia cases it appears that if the mother's disorder is not quickly controlled and if the baby is apparently viable its chances of survival are enhanced if labour is induced by simple rupture of the membranes In prematurity Cæsarean section is emphatically condemned since a baby under 4 lb seems to have only a slight chance of survival. Ingram also clearly indicates that the larger the premature infant at birth the better the prognosis In another section he discusses the autopsy investigations which in contrast to the reports of other workers show that only a small proportion of the babies died from cerebral hæmorrhage Despite this he urges injection of fresh citrated blood intramuscularly to all small babies

CANCER IN CANADA

How far the increase in the death rate from cancer is apparent how far it is real is a question which has been taken up by workers in every country In Canada a study of the available data was made some years ago by Dr Madge Macklin who concluded that in that country cancer had definitely increased [3] Recently she has made a new study of the statistics and compares the position prevailing in 1933 the last year for which figures are available with that of 1901 [4] The increase in the crude death rate is certainly not due only to the increasing age of the population of the country for comparison of the rates age by age shows that both for males and females there has been a rise in the recorded mortality at every time of life Better diagnosis may undoubtedly play a part, especially in the older age-groups in which in 1901 nearly three times as many deaths were ascribed to senility as in 1933 As a correction Dr Macklin tries the effect of considering half the deaths recorded under senility at each date as really due to cancer With this adjustment the cancer death rate still shows a considerable increase at all ages up to 75 but at 75 and over the 1933 rate is only half that of 1901 Probably the method over compensates for the lack of diagnosis in earlier days at these advanced ages. A test that is more usually applied is the comparison of the rates of increase of cancer in visible and invisible sites For the former Dr Macklin takes cancer of the mouth skin breast and uterus for the latter cancer of the stomach liver and intestines Comparison of the rates in 1901 and 1933 shows that the visible has increased proportionately considerably more than the invisible Contrary to results found elsewhere for Canada it cannot be said that the increase lies mainly in those types which are most difficult to diagnose and in which the greatest improvement in diagnosis is likely to have taken place. Dr Macklin herself finds the explanation of the rise in the elimination of other causes of death such as infectious diseases At ages over 35 there would have been in 1933 nearly 11 000 more deaths from infectious diseases in addition to those actually recorded if the 1901 death rates had prevailed, and it is this group within the cancer age, saved from dying of other diseases that causes the increase in the cancer death rate As regards causation this seems to leave us much where we were. If the extra cancer deaths to-day are of those persons whose prototypes would also have died of cancer thirty years ago if they had not been brought to an earlier end by some other disease then the increase is apparent rather than real in the sense that no new causative factors need be implicated The causative factors were the same thirty years ago but were not brought to fruition If on the other hand, more of those saved from other diseases now die of cancer than would have been the case thirty years ago then we must look for new causative factors We have no means of determining which is the true position and so cannot explain this increased death rate at every age

Canad med Ass J February 1937 p 189

ROYAL FREE HOSPITAL.—The annual court of governors of the hospital will take place at the hospital on Tuesday next March 16th at 3 P.M. *Sir Alan* Garrett Anderson, G B E M P presiding The Minister of Health Sir Kingsley Wood will speak and the hospital will be open for the inspection of visitors

CORONATION TOURS.—A *series of privileged visits* to Royal palaces and other historic buildings has been arranged in aid of King Edward's Hospital Fund for London and will take place on April 7th 10th 21st and 28th and on May 10th and 28th Visits will be paid to St James's Palace and His Majesty's Chapel Royal; the Admiralty and Foreign Office Hampton Court Palace and Old Court House; Kensington Palace and Royal Geographical Society; Lambeth Palace Royal Mint London Dock Execution Ground Toc H Church Windsor Castle and St George's Chapel Further information may be had from the secretary of the Fund at 10 Old Jewry E.C 2.

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[1] *Lancet* 1936 2 700
[2] *Amer J Obstet Gynec* 1937 7 80
[3] *Amer J Cancer* 1932 16 1193

PRINCIPLES OF MEDICAL STATISTICS

XI—LIFE TABLES AND SURVIVAL AFTER TREATMENT

In the assessment of the degree of success attending a particular treatment given to patients over a series of years the life table method is sometimes an effective procedure Before illustrating its application to such data, consideration of the national life tables and the information they contain will be of value A life table, it must be realised, is only a particular way of expressing the death rates experienced by some particular population during a chosen period of time For instance, the last English Life Table, No 10, is based upon the mortality of the population of England and Wales in the three years 1930–32 It contains six columns as follows —

English Life Table No 10 Males

Age x	l_x	d_x	p_x	q_x	$\mathring{e}_x$
0	100 000	7186	92814	·07186	58 74
1	92 814	1420	98470	·01530	62·25
2	91 394	600	99343	00657	62·21
3	90 794	400	99559	·00441	61 62
4	90 394				
102	3 9	2 1	46960	53040	1 32
103	1 8	1·0	44553	55447	1 25
104	0 8	0 5	42115	57885	1 18

The essence of the table is this suppose we observed 100,000 infants all born on the same day and dying as they passed through each year of life at the same rate as was experienced at each of those ages by the population of England and Wales in 1930–32, in what gradation would that population disappear ? How many would be still left alive at age 25, at age 56, &c ? How many would die between age 20 and age 30 ? What would be the chance of an individual surviving from age 40 to age 45 ? What would be the average length of life enjoyed by the 100,000 infants ? Such information can be obtained from these different columns The basis of the table is the value known as q_x, which is the probability, or chance, of dying between age x and age $x+1$, where x can have any value between 0 and the longest observed duration of life For instance q_{25} is the chance that a person who has reached his twenty-fifth birthday will die before reaching his twenty sixth birthday These probabilities, one for each year of age, are calculated from the mortality rates experienced by the population in 1930–32 (for details of method see Woods and Russell, Medical Statistics) This probability of dying is the ratio of those who fail to survive a particular year of life to those who started that year of life (to take an analogy, if 20 horses start in the Grand National and 5 fail to survive the first round of the course the probability of "dying" on that round is 5/20, 15 horses are left to start on the second round and if 3 fail to survive, the probability of "dying" on the second round is 3/15)

The National Life Table

In Life Table No 10 the probability of dying in the first year of life is 0 07186, or in other words, according to the infant mortality-rate of 1930-32, 7 186 per cent of our 100,000 infants will die before they reach their first birthday The actual number of deaths between age 0 and age 1 will therefore be 7 186 per cent of 100,000, or 7186 Those who *survive* to age 1 must be 100,000 less 7186=92,814 According to this table, the probability of dying between age 1 and age 2 is 0·01530, or in other words 1 530 per cent of these 92,814 children aged 1 year old will die before reaching their second birthday The actual number of deaths between age 1 and age 2 will therefore be 1 530 per cent of 92,814=1420, those who survive to age 2 must therefore be 92,814 less 1420=91,394 From these q_x values the l_x and d_x columns can thus be easily constructed, l_x showing the number of individuals out of the original 100,000 who are still alive at each age, and d_x giving the number of deaths that take place between each two adjacent ages p_x is the probability of living from one age to the next p_x+q_x must equal 1, since the individuals must either live or die in that year of life (to return to our analogy if 5 out of 20 horses do not complete the round, clearly 15 out of 20 do survive the round) p_x therefore, equals $1-q_x$, for example, of the 91,394 children aged 2, 0 657 per cent die before reaching age 3, and it follows that 99 343 per cent must live to be 3 years old Finally, we have the column headed $\mathring{e}_x$ which is the "expectation of life" at each age This value is not really an "expectation" at all but is the *average* duration of life lived beyond each age For example, if we added up all the ages at death of the 100,000 infants and took the average of these durations of life we should reach the figure 58 74 years If, alternatively, we took the 92,814 infants who had lived to be 1 year old, calculated the *further* duration of life that they enjoyed, and then found the average of those durations, we should reach the figure 62 25 years At age 102 there are only 3 9 "persons" still surviving and the average duration of life that they will enjoy *after that age* is only 1 32 years The so called expectation of life is thus only the average length of life experienced after each age We thus have the complete life table

To reiterate, it shows how a population would die out if it experienced as it passed through life the same death rates as were prevailing in England and Wales in 1930–32 It does not follow therefore, that of 100,000 children born this year in reality only 90,794 will be alive at age 3, if the death rate is in fact declining below its 1930–32 level, then more than that number will survive if it is rising less than that number will survive The life table can show only what would happen under *current conditions of mortality*, but it puts those current conditions in a useful form for various comparative purposes and for estimating such things as life insurance risks (inherent in the questions that were propounded above)

The Measurement of Survival-rates after Treatment

We turn now to the application of the method to groups of patients treated over a period of calendar years whose subsequent after history is known Let us suppose that treatment was started in 1931, that patients have been treated in each subsequent alendar year and have been followed up to the end f 1936 on each yearly anniversary after their treatment was started (none being lost sight of) Of hose treated in 1931 we shall know how many died uring the first year after treatment, how many ied during the second year after treatment and so n to the fifth year after treatment. Of those treated n 1932 we shall know the subsequent history up to nly the fourth year of treatment in 1933 up to only he third year of treatment and so on Our tabulated results will be let us suppose as in Table XI

TABLE XI

Results of Treatment (Hypothetical Figures)

Year of treat ment.	No of patients treated	Number alive on anniversary of treatment in—				
		1932	1933	1934	1935	1936
1931	62	58	51	46	45	42
1932	39		36	33	31	28
1933	47			45	41	38
1934	58				53	48
1935	42					40

Calculation of the survival rates of patients treated n each calendar year becomes somewhat laborious f the number of years is extensive and has also to be based upon rather small numbers If the fatality rate is not changing with the passage of time there is no reason why the data should not be amalgamated in life table form For clarity we can write Table XI in the form given in Table XII

TABLE XII

Results of Treatment (Hypothetical Figures)

Year of treat ment	No of patients treated	Number alive on each anniversary (none lost sight of)				
		1st	2nd	3rd	4th	5th
1931	62	58	51	46	45	42
1932	39	36	33	31	28	
1933	47	45	41	38		
1934	58	53	48			
1935	42	40				

All the patients have been observed for at least one year and their number is 42+58+47+39+62=248 Of these there were alive at the end of that first year of observation 58+36+45+53+40=232. The probability of surviving the first year after treatment is therefore 232/248=0·94 or in other words 94 per cent of these patients survived the first year after treatment Of the 40 patients who were treated in 1935 and were still surviving a year later no further history is yet known. (If the year's history is known for some of them these must not be added in for the history would tend to be complete more often for the dead than for the living and thus give a bias to the results.) As the exposed to risk of dying during the second year we therefore have the 232 survivors at the end of the first year minus these 40 of whom we know no more—viz 192 Of these there were alive at the end of the second year of observation 51+33+41+48=173 The probability of surviving throughout the second year is therefore 173/192=0·90 Of the 48 patients who were treated in 1934 and were still surviving in 1936 no later history is yet known. As the exposed to risk of dying in the third year we therefore have the 173 survivors at the end of the second year minus these 48 of whom we know no more—viz 125 Of these there were alive at the end of the third year of observation 46+31+38=115 The probability of surviving the third year is therefore 115/125=0·92 We know no further history of the 38 patients first treated in 1933 and still surviving on the third anniversary The number exposed to risk in the fourth year becomes 46+31=77 and of these 45+28=73 are alive at the end of it The probability of surviving the fourth year is therefore 73/77=0·95 Finally during the fifth year we know the history only of those patients who were treated in 1931 and still survived at the end of the fourth year—namely 45 persons Of these 42 were alive on the fifth anniversary so that the probability of surviving the fifth year is 42/45 or 0·93

CONSTRUCTION OF THE SURVIVORSHIP TABLE

Tabulating these probabilities of surviving each successive year we have the values denoted by p_x in column (2) of Table XIII The probability of not surviving in each year after treatment, q_x, is immediately obtained by subtracting p_x from 1 The number of patients with which we start the l_x column is immaterial but 100 or 1000 or some such number is convenient. Starting with 1000 our observed fatality rate shows that 94 per cent would survive the first year and 6 per cent would die during that year The number alive l_x, at the end of the first year must therefore be 940 and the number of deaths d_x, during that year must be 60 For these 940 alive on the first anniversary the probability of living another year is 0·90 or in other words there will be 90 per cent alive at the end of the second year—i e 846—while 10 per cent will die during the second year—i.e. 94. Subsequent entries are derived in the same way (The order of the columns in the table is immaterial. The order given in Table XIII is the most logical while the table is being constructed because p_x is the value first calculated and the others are built up from it In the final form the order given in the English Life Table No 10 of which an extract was previously given, is more usual)

TABLE XIII

Results of Treatment in Life Table Form

Year after treat ment.	Probability of surviving each year	Probability of dying in each year	Number alive on each anniversary out of 1000 patients	Number dying during each year
x (1)	p_x (2)	q_x (3)	l_x (4)	d_x (5)
0	·94	·06	1000	60
1	·90	·10	940	94
2	·92	·08	846	68
3	·95	·05	778	39
4	·93	·07	739	52
5			687	

By this means we have combined all the material we possess for calculating the fatality in each year of observation after treatment and have found that according to these fatality rates approximately 69 per cent of treated patients would be alive at the end of 5 years If we want the average duration of life so far lived by the patients it is easily obtained

687 patients of our imaginary 1000 live the whole 5 years If we presume that those who died actually lived half a year in the year in which they died (some will have lived less, some more, and we can take, usually without serious error, the average as a half), then 60 lived only half a year after treatment, 94 lived a year and a half, 68 lived two years and a half, 39 lived three years and a half, and 52 lived four years and a half The average length of after-life is, therefore (so far as the experience extends) (687 × 5 + 60 × 0 5 + 94 × 1 5 + 68 × 2 5 + 39 × 3 5 + 52 × 4 5) ÷ 1000 = 4 15 years

The percentage alive at different points of time makes a useful form of comparison For instance of patients with cancer of the cervix treated between 1925 and 1934 we find by summarising some published figures in life table form, roughly the following number of survivors out of 100 in each stage of disease —

	Stage			
	1	2	3	4
At end of 5 years	86	70	33	11
, 9	78	57	27	0

EXCLUSION OF PATIENTS

If some of the patients have been lost sight of or have died from causes which we do not wish to include in the calculation (accidents for example), these must be taken out of the exposed to risk at the appropriate time—e g , an individual lost sight of in the fourth year is included in the exposed to risk for the first three years but must be removed for the fourth year If he is taken out of the observations from the very beginning the fatality in the first three years is rather overstated, for we have ignored an individual who was exposed to risk in those years and did not, in fact, die If patients are being lost sight of at different times during the year or dying of excluded causes during the year, it is usual to count each of them as a half in the exposed to risk for that year In other words they were, on the average exposed to risk of dying of the treated disease for half a year in that particular year of observation Clearly if a relatively large number of patients is lost sight of we may be making a serious error in calculating the fatality rates from the remainder, since those lost sight of may be more, or less, likely to be dead than those who continue under observation Complete follow up histories are the desiderata An excellent example of the application of life table methods to the survival rates of patients will be found in an analysis of 8766 cases treated at the Brompton Hospital Sanatorium, Frimley, made by Sir Percival Horton Smith Hartley, R C Wingfield, and V A Burrows (1935, *Brompton Hosp Rep* vol 4)

Summary

Life tables are convenient methods of comparing the mortality rates experienced at different times and places The same methods may be usefully applied to the statistics of patients treated in a particular way and followed up over subsequent years A B H

SPECIAL ARTICLES

SOME PRACTICAL ASPECTS OF MEDICINE IN U S S R

By R H Dobbs, M B , M R C P
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Audrey E Russell, M B
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Much has been written, in books and in medical journals, on the State medical service of Soviet Russia These have made it possible to understand not only the organisation as it exists now, but also the immense difficulties that faced the Government fifteen years ago when there was nothing but an inadequate and primitive medical service disorganised by war and revolution Our object here is to supplement existing publications by recording observations, mainly on maternity and child welfare, made whilst visiting clinics, institutions, and hospitals in Moscow and Leningrad

The primary concern of the medical service in the U S S R is not with hospitals or with diseases and their cures but with the maintenance and improvement of the health of the community The care of the sick and their disposal to hospital becomes a subsidiary function In the public mind the emphasis has thus been shifted away from the idea of disease toward that of health, which in itself helps to promote a healthy society

The medical service of the towns aims at dividing the population into groups of from 40,000 to 100,000 persons, each group in a district being centred around a polyclinic, or prophylactorium These clinics are responsible for all matters concerning health and disease in their districts, and their functions include maternity and child welfare, health visiting, public health services, and sanitary inspection of houses, shops, and public baths, as well as the care of the sick either in the clinic, or in their homes, or by arranging for their transference to hospitals Thus under one institution and under the control of one district director and his staff are centralised functions that in London may be divided between the general practitioner, the panel doctor, the consultant, the local medical officer of health, the voluntary hospital, and the medical services of the London County Council

We visited two such institutions in Moscow The first is one of eleven large new clinics opened in 1930, each of which is responsible for approximately 100,000 of the population It is a building that would put to shame most out patient departments in this country The staff consists of the director and his assistant whose duties are mainly administrative, general physicians responsible for sub sections of the district, specialists in all branches of medicine, and pathologists, together with a full staff of sisters, nurses, health visitors, and sanitary inspectors

The district served by a clinic is divided into sub districts of so many streets and housing approximately 2000 people, and each is under the charge of a district medical officer whose duty it is to attend to ambulatory cases at the clinic in the morning and to visit those confined to bed in their homes in the afternoon A doctor is also available for visiting those needing attention between 9 P M and 9 A M The district officer has the services of the pathology department at his disposal and refers cases needing special advice or treatment to the appropriate consultant, who either sees the patient at the clinic or visits him in his home

At his first attendance at the clinic the patient is seen in his turn and is then given an appointment card, the number of which enables him to gauge within half an hour or so at what time he will be seen at his next attendance. This to a large extent obviates a crowded waiting hall with all its disadvantages On an average working morning in a clinic handling 1000 or more cases a day there is a constant stream of patients coming and going in the entrance hall but no more than three or four waiting outside each consultation room Moreover the clinic is open from 9 A.M to 9 P.M. which reduces congestion further so that each doctor sees an average of only five or six new patients or sixteen old ones in an hour

The impression we received was that the organisation exists primarily not only for the health but also for the convenience and comfort of the patients It is true that the clinic in question has the advantage of modern housing and equipment but it is one of eleven similar clinics already serving 1¼ million people in Moscow and others are projected to replace those housed in old buildings ill adapted to their purpose By a fortunate chance we strayed into a dilapidated old clinic on the outskirts of Moscow where by the courtesy of the German-speaking director we were given the opportunity of observing for ourselves that even under adverse conditions an equally high standard of efficiency is being maintained

Maternity and Child Welfare Service

The antenatal and postnatal maternity services are always considered as one unit and are housed together with the child welfare department the gynæcological department and the department for the teaching of contraception This unit is usually incorporated in a district polyclinic but may be housed separately or be attached to an experimental Mother and Child Institute, and in any case each serves a definite district with no overlapping and all conform closely to a pattern In each department of the unit the walls of the waiting hall and passages are decorated with charts pictures and models giving well-conceived educational propaganda on the problems of the department concerned—on such points as the physiology of conception and normal pregnancy the feeding and clothing of pregnant women and of children the value of fresh air and exercise

CONTRACEPTION

The demand for contraceptive advice is said to be small In connexion with the recent illegalisation of abortion it is of interest to record that according to the doctor at the Moscow polyclinic in the short time since the new laws were passed there has been no increase in the demand for advice on contraception *but there has been an increase in the number of pregnancies* On the other hand we found that this tendency was already apparent before the laws came into force. For instance at this clinic at which are registered over 100 000 persons, the number of abortions dropped from 2247 in 1931 to 1030 in 1934 The number of pregnancies rose from 902 to 1148 while the first attendances at the contraception clinic showed no material change (893 in 1931 and 899 in 1934)

The contraceptive method in favour appears to be a small metal cervical cap which is refitted by the doctor each month A variety of rubber caps and chemicals are also in use

PREGNANCY

As everyone must now know pregnancy in the Soviet Union has ceased to be a social or financial handicap Every pregnant working woman (and 70 per cent of the adult female population in Moscow is at work) has 8–12 weeks leave from work on full pay both before and after the birth of her child. In order to have her doctor's certificate she must in *any case attend an antenatal clinic earlier than the* seventh month of pregnancy but a very large proportion of women come to the clinic much earlier

Antenatal care is conducted on lines similar to those in any London hospital in addition to which excellent educative propaganda in the form of diagrams models and frequent lectures on clothing diet, exercises, physiology and care of the infant is carried out In fact the educative function of the antenatal clinic is organised on a scale unparalleled in this country At the antenatal clinic expectant mothers are told at which hospital they will be delivered and at the onset of labour they present themselves there for admission There is no organisation in Moscow for the delivery of women in their own homes and hospitalisation approaches 100 per cent in all large towns[1] The largest maternity hospital in Moscow the Clara Zetkin of which Prof Blisnjanska is the director serves a number of district antenatal clinics admitting some 6000 maternity cases a year That the standard of maternity care is at least as high as that in similar institutions in this country is shown by the maternal morbidity and mortality figures 15.0 and 1.0 per 1000 respectively The maternal mortality for the whole of Moscow is 2.1 per 1000 that for England was 3.94 per 1000 in 1935

On admission to hospital the patient is bathed and undergoes a general and obstetrical examination The pyrexial cases are admitted to a separate septic block while the apyrexial pass directly to the labour wards of the main hospital. Labour is conducted in two adjacent wards each of ten unscreened beds patients passing from one to the other at the end of the first stage of labour Anæsthesia is recommended for primiparæ and for others when so ordered by the obstetricians A shortage of general anæsthetics has led to the use of a variety of local and basal anæsthetic measures There is however little concession to ideas of modesty or privacy and no small impression was made on us by the sight of seven unscreened women in the second stage of labour and an eighth in the lithotomy position with a recently expressed placenta in a dish beside her One can well imagine the feelings of a young primipara in the early pangs of the second stage involuntarily receiving auditory and visual evidence of what the immediate future holds in store for her[2]

Two hours after delivery the mother is removed to a recovery ward and the baby to a nursery Post-partum care of the mother proceeds along usual lines and includes daily physical exercises and on the final day an instructional lecture on the care of herself and her baby She does not, however have any personal contact with her child except at feeding time until she goes home and has no opportunity of attending to it under supervision In the absence of complications the women get up on the morning of the eighth day and go home on that afternoon A curious defect in the organisation is that arrangements for transport are left to the woman's relatives with the result that some women do in fact walk home alone with the infant

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[1] Webb S and B (1936) Soviet Communism: A New Civilisation? London Pp 820 872

[2] It is only right to add that similar conditions exist in many maternity hospitals in this country

CHILD WELFARE

To an English observer it is surprising to find how large a proportion of women successfully feed their infants on the breast The problem of artificial feeding as we know it in England and America, with its multiplicity of foods and methods, does not exist in the Soviet Union, and the maintenance of lactation gives no difficulty even in the big industrial centres where a large proportion of the women are at work A mother who "loses her milk" is a rarity, and even supplementary feeding is uncommon before six or seven months In the Moscow district polyclinic that we visited, which has on its books 6000 children of 0–3 years, only 10 babies under six months of age were being given supplementary feeds, and these, it may well be noted, were of human milk In another clinic, where 2000 children under one year attended, none under six months were entirely artificially fed, and the director estimated that not more than 5–10 per cent were receiving supplementary feeds In Leningrad, Prof Mendeleevar at the Institute for the Protection of Mother and Child, an experimental clinic to which a large number of difficult cases are referred, estimated that 80 per cent of the babies attending are entirely breast fed at six months These figures are astonishing to anyone who has worked in welfare centres in London, and they contrast sharply with figures collected by one of us (A E R) from a number of welfare centres in North London, where of 980 cases examined only 41 per cent were entirely breast-fed at four months old It is difficult to find an adequate explanation for this difference between the capabilities of the women of the two countries in respect to what should be a natural physiological function The general standard of living and nutrition of the Moscow women and the London working classes do not appear to differ sufficiently to account for it One factor that may play a part is that breast feeding has always been customary among the Russian peasantry, and industrialisation has fortunately not been allowed as yet to interfere with this natural state of affairs The medical authorities accept without question the importance, or rather the necessity for breast feeding, and under every condition of health and social circumstance the mother and her nursling are regarded as one unit From the day of birth every effort is made to avoid any procedure which may prejudice the success of lactation The mother has two months away from her work on full pay before and after the confinement This measure in itself removes any cause for financial and domestic worry On her return to work the mother takes her infant to the factory or office creche and is released from her work for half an hour every three or four hours to feed it Again, illness on the part of the mother or child is not allowed to interfere with the process of breast feeding At the Clara Zetkin Institute, the professor's assistant told us that they recognise no contra indication to lactation whatsoever on the part either of the mother or the child[3] Women with puerperal fever, pneumonia, cardiac disease, and so on still suckle their infants, and only if the mother is severely exhausted is the milk expressed by artificial means and given to the child by bottle The suppression of milk secretion is considered to be an additional strain on a sick woman

In the event of the child falling ill the continuation of breast feeding is still more greatly valued The mother is regarded as a most valuable ally of the medical attendants At the Morozov Clinic, a children's hospital in Moscow, out of a total of 700 beds, 100 are set aside for the accommodation of the mothers of infants admitted for medical or surgical treatment, and one of the most vivid and pleasing memories of our visit is that of entering a small ward in this hospital where a baby recently operated on for a hare lip was asleep in a cot with the mother resting on a bed near to it reading while she waited to attend upon and to feed the child In Leningrad we found that there is adequate accommodation for the mothers at the clinic during the day, but that they return home at night The production of a doctor's certificate of sickness of a child whether at home or in hospital, releases the mother from her work on full pay Lastly, in the few instances where a woman for one reason or another is unable to breast-feed her baby, a supply of human milk is obtainable from the milk kitchens attached to the welfare centres Women with an excess of milk or those in process of weaning their own children are encouraged to come up to the milk kitchen departments and to sell their milk, this they are taught to express under supervision and it is then bottled and sterilised Dried and evaporated milk is scarcely used in the clinics, and there is no dried milk industry as yet established in the U S S R

Weaning is carried out with cow's milk and a variety of starchy and vegetable additions This process has led to the organisation of the milk kitchens which are a striking feature of the Soviet welfare centres, and which form a new and valuable contribution to the problem of supplying the children of an industrial population with properly prepared clean milk and other food These milk kitchens supply one or more district welfare centres, and the output of each is approximately 5000 or more feeding bottles a day Each kitchen obtains its milk from one farm, usually State owned, where collection is regulated and where the herds are tuberculin tested. The milk arrives at the kitchen within a few hours of collection and it is at once cooled, standardised with regard to chemical and bacterial content, and put up and sterilised in sealed bottles either as whole milk, modified or acid milk, or in combination with a large variety of cereal and vegetable products The bottles are set aside in cooled chambers to await distribution to the mothers, who present daily the formula which they have been given by the doctor, and receive the requisite number of bottles made up according to this prescription and ready for the day's feeds In this way each feed is contained in a single bottle and the risk of contamination is negligible

By means of these milk kitchens the diet of a large number of children from six months to three years of age can be controlled and adjusted according to current knowledge of nutritional requirements, and by such an organisation nutritional experiments could be undertaken on an unprecedented scale On the other hand, any defects in the milk diets put out by the kitchens, whether local defects such as some error in one of many processes before the food reaches the children, or a more general neglect of some principle of infant feeding, will be widely reflected in the standard of health and nutrition of the local or general infant community Indeed, we consider that one essential principle of infant feeding is being neglected and that a combination of circumstances has led to a fairly widespread iron deficiency anæmia among the young children (in Moscow at least, where the greater part of these observations were made) We use the words iron deficiency anæmia advisedly as the state of nutrition of the child population appeared in other ways to be satisfactory which indeed would be expected as a result of the methods of infant feeding we have described.

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[3] But see section on tuberculosis below

The striking and unquestionable pallor of the children under three years of age in institutions and even in the streets is a point that so far as we can discover has not been commented upon nor has the question of iron deficiency anæmia been investigated or recognised At no hospital, creche clinic or even experimental institute would any doctor agree with us when we suggested that some of the children were suffering from this type of anæmia We were told that anything over 65 per cent of hæmoglobin is accepted as normal, but it is clear that many of the children fall short of this standard Our impression was supported by figures shown to us at a creche in Moscow where of 67 apparently healthy children of one to three years of age the average hæmoglobin level (Sahli) was 50 5 per cent (lowest 27 per cent highest 64 per cent) Four of these children had hæmoglobin levels below 40 per cent

In this country iron deficiency anæmia is looked upon as an indication of a state of under nutrition and a widespread anæmia amongst the child population of Moscow and Leningrad is at first sight at variance with the indubitable fact that the mothers are so very successful at providing the ideal food for their infants, and that the health authorities apparently provide more complete welfare supervision for the infants than we do in this country We sought therefore, to discover some adequate explanation for this apparent paradox by determining at what point the infant population is receiving inadequate supplies of iron

The infant receives a store of iron during fœtal life that has to last it until it is given some food containing more iron than does human or cow s milk We have no direct evidence pointing to the existence of anæmia among Russian women nor could we find that blood analyses have been done on a large scale upon pregnant women The following points however are at least suggestive Meat has only become at all plentiful during the last year or so Before 1936 it was often unobtainable at any price The position with regard to green vegetables is similar but less striking Certain it is that for the four or five years previous to 1936 the diet of the general population was such that iron deficiency anæmia was most probably present Such few figures as we were able to obtain taken at random from the books of the polyclinic showed that the average blood count of women attending the clinic for a variety of diseases was red cells 4 380 000 hæmoglobin 69 per cent (Sahli). We can say therefore that in all probability children six months of age at the time of our visit in September 1936 were born of women who for the past ten or fifteen years have been getting a diet deficient in iron The methods of weaning practised in Russian clinics also have some bearing on this question At the District Polyclinic in Moscow children are breast fed for about seven months or longer if the child was premature vitamin additions being given from three months From seven months rice flour is given with a cow s milk mixture at eight months fruit juice (grape) is added and not until ten months is any iron containing food given At the Institute for Mother and Child Protection at Moscow meat juice is given at eight months We were told by a doctor working in a small outlying clinic that of her seven colleagues two were pre revolutionary in training and kept the babies under their care on breast-milk alone up to twelve or fourteen months There thus exists, in the low iron store at birth in the late weaning which is fostered to a great extent by the very success in breast feeding that we have commented upon and in the excessive use of cereal foods deficient in iron such as rice barley and fruit juices a combination of factors predisposing to iron-deficiency anæmia in young children Furthermore, the facts that even with otherwise adequate food iron in some form is needed by the infant at an early age and that anæmia increases susceptibility to infection do not appear to have yet been recognised in the Soviet Union The director of a Moscow polyclinic when he agreed that some of the extremely pale children might be suffering from some degree of anæmia asked whether after all it was of any great consequence Questions relating to treatment were answered in terms of ultra violet light fresh air good food extra vitamins and medicines containing phosphorus and calcium specifically to improve bone growth. More often than not, iron was omitted from the suggested treatment These facts provide some basis for the criticism which is sometimes levelled at the medical science of the Soviet Union that during its rapid general advance progress has lagged behind unaccountably in many directions This is not surprising and is scarcely avoidable since this progress has taken place in circumstances of comparative isolation due partly to the language difficulty and partly to the historical events of the past twenty years

Tuberculosis

Before the revolution little or nothing was done to deal with the problem of tuberculosis although it did, and still does, rank highest in the list of fatal diseases The death rate per 10 000 in Russia in 1913 was 22 per 10 000 Since 1920 when the death rate in Moscow from tuberculosis reached the high figure of 39·7 per 10 000 a nation wide campaign has been fought against the disease with the result that the figure was lowered to 11 6 per 10 000 in 1931 [4] and 9 7 per 10 000 in 1935 Of recent years this campaign has been intensified and we think that the efforts made in so far as children are concerned are worthy of a special note.

The milk for general consumption is sold in dairies and comes by way of the milk factories from collective farms whose herds are not tuberculin tested and many of whose cows are therefore presumably infected At the factory the milk is inspected pasteurised and bottled In addition a certain amount of raw uninspected milk is sold in the open market by individual peasants The milk kitchens attached to the district child welfare centres which supply a very large proportion of the child population up to three years of age in the big towns, receive milk each day from their own State-owned farms At some of these farms the herds are regularly tuberculin tested but this is not done universally, At the milk kitchen the milk is sterilised as we have already described, in order to prevent the spread of tuberculosis and other bacterial disease amongst the children

Another feature of the fight against tuberculosis which is apparently unique to the U S S R is the institution of night sanatoria, to which attention has frequently been drawn [5, 6] To these institutions which are attached to the regional tuberculosis dispensaries, children with "weak chests" or whose home conditions are particularly bad are sent to spend the night and be provided with two good meals. They go to school as usual during the day. A second group of children come during the day and return to their homes at night. In this way many children, though not ill enough to be sent away, can yet for several months spend half their time under medical supervision in hygienic surroundings and be assured of adequate nourishment. Night sanatoria for adults are run on the same lines.

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[4] Webb S and B (1935) Soviet Communism A New Civilisation? London p 858

[5] *Ibid* p 856

[6] Newsholme A., and Kingsbury J A (1934) Red Medicine London p 247

Lastly, in common with a number of other countries, the U.S.S.R. is using B.C.G. vaccine for the immunisation of infants born of tuberculous parents. Women attending the tuberculosis dispensaries who become pregnant, and those attending district antenatal clinics who are found to have tuberculosis, are carefully supervised at the dispensaries, and provided the disease is quiescent are allowed to come to term normally. When the baby is born, it is given B.C.G. vaccine by mouth before the tenth day, and meanwhile is allowed to feed at the breast. Women with open tuberculosis who become pregnant are either advised to have an abortion or are sent to the Clara Zetkin Maternity Hospital in Moscow. This institute receives all such cases from Moscow and a wide surrounding district. Every woman is there immediately admitted and her condition investigated by a panel of three doctors, consisting of a chest specialist, an obstetrician, and a pediatrician, and the most suitable treatment is devised to suit the case. The woman is then sent to spend the rest of her pregnancy in a sanatorium, returning to the Institute to be delivered. When the child is born it is immediately separated from the mother for the first ten days of its life, while it is immunised by the oral administration of B.C.G. vaccine. Meanwhile lactation is encouraged by artificial means, and the milk fed to the infant. At the end of ten days the child is returned to the mother, and both spend a further period at a sanatorium. During the past few years 1270 women with tuberculosis (95 per cent. with pulmonary tuberculosis, 14.6 per cent. with positive sputum) have been treated in this way and their babies immunised with B.C.G. vaccine. The infantile mortality in the first year of life was 117 per 1000 (as compared with the figure of 120 per 1000 for the whole of Moscow); only two children died of tuberculosis, one not having been immunised.[7]

The authorities in Moscow claim that the results of this experiment are already encouraging, as is indicated by the figures above which were given to us by the director of the Institute, and it is intended shortly to extend this immunisation to cover all infants born, irrespective of the state of health of the parents. By this procedure it is hoped eventually to reduce the incidence of tuberculosis among young children to negligible proportions.

Medical science in the Soviet Union has produced much that is admirable both in theory and in practice. The most noteworthy and characteristic achievement has been a fundamental change of viewpoint from a preoccupation with the study of disease to a realisation of the far greater importance of the maintenance and improvement of health. The outcome of this realisation has been the establishment of a national medical service which is designed to deal with all aspects of the health of the community and in which emphasis is laid on preventive measures. In the large towns, and in those departments of medical science with which we are familiar, this service appeared in practice to be satisfactory both to the individual and to the State. An immediate advantage of such an organisation is that health measures approved of in principle can be rapidly put into effect over a large proportion of the population. The scope for research on a national scale appears to be almost unlimited, and it is going forward in many branches of medicine.

It is of great interest to the visitor to study the advantages and disadvantages of a State health service developed on logical lines on such a comprehensive scale, and we are grateful to the many doctors and officials whose kindness and patience helped us to follow the working of this medical service, of which the Soviet Union is justifiably proud.

INTERNATIONAL BIOLOGICAL STANDARDS

ON a previous occasion[1] we gave an account of the history and development of the work of the Permanent Commission on Biological Standardisation of the Health Organisation of the League of Nations. The current number of the Quarterly Bulletin[2] records the progress made during the past two years, during which time standards for three of the sex hormones, for gas gangrene antitoxin (histolyticus), and for diphtheria antitoxin for use in the flocculation test have been adopted. During the period it has been necessary to make certain changes in regard to some of the standards which have been in use for many years.

Insulin

Partly on account of the fact that the original insulin standard established in 1925 is now exhausted and partly because that standard has become progressively less suitable for the assay of the increasingly pure insulins of commerce, a new international standard for insulin has been provided by the Commission. The standardisation of this important remedy, the safe and effective application of which depends so much upon accurate dosage, was put upon secure foundations in 1925 by the adoption of an international standard and the definition of a unit. The original standard was prepared from the purest insulin available at the time, and for many years it served its purpose. With the advent of the highly purified insulins of commerce, however, it was observed that small but definite differences in potency were assigned to pure preparations according as to whether the assays were carried out by the use of rabbits or of mice, when the comparison was made directly with the relatively impure standard. The reason for these discrepancies is not at present fully known, but the fact that they occur and, moreover the fact that samples of pure crystalline insulin have activities which are indistinguishable by whatever method they are assayed, led to the decision to adopt, as the new international standard a preparation of the purest insulin obtainable; 51 grammes of such a highly purified insulin was prepared by Dr. D. A. Scott of the Connaught Laboratories, Toronto and, through the generosity of the insulin committee of the University of Toronto was placed at the disposal of the Commission with a view to its adoption as the new international insulin standard The next problem was to assay the new standard in terms of the original one—in effect to determine the weight which had the same activity as one-eighth of a milligramme of the original standard which, since 1925 had represented the unit of insulin activity Comparative tests were carried out by three independent investigators in Canada three in England one in Denmark and one in the United States of America The discrepancies already referred to were again revealed in the evaluation of the new standard in terms of the old using the rabbit as the test animal, the average value of the new standard was 21 5 units per milligramme while the average value by the mouse convulsion method was about 25 units per milligramme The results of the determinations of the experts were subjected to critical examination by a small conference consisting of Sir Henry Dale Prof C H Best and Prof A Krogh. They gave reasons why it was not possible to decide upon the unit value of the new standard solely on the basis of the values returned but taking into consideration all the data and available information and the views of the individual members of the conference the Commission decided to accept the new standard for international use and redefined the unit of insulin as the specific insulin activity of one twenty-second of a milligramme of the new standard It is stated that no appreciable change or at most a fractional change in the direction of a slight increase in the value of the unit is involved in the decision now taken Further it is pointed out that the difficulties which have been encountered in the present inquiry are unlikely to recur that the value now accepted for the unit of insulin in terms of the new standard is likely to be final and permanent and not subject to further uncertainty or possibility of even a fractional change if replacement again becomes necessary and that the standard itself being a pure crystalline substance is susceptible to periodical control in comparison with new samples of freshly prepared insulin.

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[7] Blisnjanska, A. I., Lasarevitsch, A. I., and Trionsse, M. W. (1935) *Gynéc. et Obstét.* 32, 505.

[1] *Lancet*, 193 , i, 68 .

[2] *Quart. Bull. Hlth Org. L.o.N.*, Biological Standardisation Spec. No., November, 1936.

Digitalis

The original international standard digitalis powder established in 1926 now being practically exhausted a new standard preparation has been adopted by the Commission Replacement in this case has been relatively simple In 1928 a large quantity of dry powdered digitalis leaves was prepared in England accurately assayed in terms of the international standard and adopted as the British standard digitalis for use in connexion with the British Pharmacopœia Recent comparative tests have confirmed the earlier evaluation of the potency of the British standard and an assurance having been obtained of its stability and suitability for use the Commission decided to adopt the British standard preparation as the new international digitalis standard Adequate quantities of the preparation have been placed at the disposal of the Commission by the National Institute for Medical Research Hampstead where it is maintained for international distribution

Posterior Lobe Pituitary

In 1925 an international standard for posterior lobe pituitary was established and a small quantity of standard powder was available for the assay of national standards No laboratory however has hitherto been officially entrusted with the care and distribution of the posterior lobe pituitary standard In England a quantity of dry posterior lobe pituitary powder equal in activity to the small sample referred to above has been in use as a national standard since 1925 Moreover since the National Institute for Medical Research has, for many years distributed this standard to workers in many countries the Commission decided to adopt as the international standard of pituitary extract, the posterior lobe pituitary powder prepared at this institute and to request it to hold and distribute the standard on behalf of the Health Organisation The Commission took the further step of defining a unit of antidiuretic activity in terms of the international standard. The position has now been reached therefore that the standard maintained at Hampstead is now officially adopted as the international standard for the assay of the active principles of the posterior lobe of the pituitary and the unit of oxytocic, pressor and antidiuretic activity respectively are defined in terms of this preparation. It is pointed out that when the present standard has to be replaced it will be necessary to make a fresh determination of the relation in which the oxytocic pressor and antidiuretic actions stand to each other and if necessary to redefine the units in terms of which those three actions are expressed.

Arsphenamine

In 1925 international standards for six arsphenamine (arsenobenzene) derivatives were established and, until recently all of these except sulpharsphenamine were maintained at Frankfurt for international distribution. Circumstances have arisen which necessitate a new arrangement whereby these standards can be made available for international use and the Commission has accordingly entrusted the National Institute for Medical Research with the preparation preservation and international distribution of the standards of the arsphenamine group The standard for sulpharsphenamine has been maintained at this institute and distributed therefrom on an international basis since 1928 and present indications are that it will only be necessary to maintain international standards for arsphenamine neoarsphenamine and sulpharsphenamine

The total number of international biological standards established by the Commission is now 27 Of these 12 are standards for antitoxins antisera and old tuberculin and are maintained at the State Serum Institute Copenhagen and 15 are standards for drugs hormones and vitamins and are maintained at the National Institute for Medical Research At these two institutes the standards are available for supply to laboratories and research workers throughout the world Reports from these institutes deal with the preparation care and preservation of the standards and the administrative procedures adopted to bring them into effective use They draw attention to the increasing demand for the standards and emphasise the need for the establishment of a national centre or centres in each country [2] in order that simplification and economy of administration may be effected the widest possible application of the standards ensured and research work in the field of biological standardisation facilitated and advanced

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[2] Report of the Inter-Governmental Conference on Biological Standardisation Ibid 1935 4 631

LOUGHBOROUGH QUEEN'S NURSES —Lady May Abel Smith has opened a new home for Queen's nurses at Loughborough erected at a cost of £3000

PARIS

(FROM OUR OWN CORRESPONDENT)

THE CRISIS IN SILK SUTURES

THE recent history of the vicissitudes of the silk suture industry was given at a meeting of the Academy of Medicine on Feb 16th by Dr E Perrot and Dr P Bruère Though the prospect of the supply of silk sutures from Spain being cut off owing to the civil war is the immediate cause of the alarm felt in France at present, the question of making the country independent of foreign supplies is many years old The term applied to surgical silk, "crin de Florence," owes its origin to the fact that certain natives of Tuscany emigrated into the valley of the Rhone, bringing with them the industry of fishing silk This was first introduced into France for the benefit of fishermen in 1760, and it was not till 1877 that Trélat found such silk suitable for ligatures in surgery Soon after the late war the question of manufacturing surgical silk was submitted to a special commission, and in due course a model organisation was set up at Alès (Gard) All went so well that by 1930 the home product was found by experts to be quite equal in quality to the imported article, and for a time it looked as if French made surgical silk had come to stay, but at this stage a dismal concatenation of circumstances upset the whole scheme At the present time the surgical requirements of France every year amount to more than two million silk threads, 1,400,000 being required for the civilian population and for export, 500,000 for the Assistance Publique, and 100,000 for the army It was calculated in 1925 that a million threads per month would be required by the army on mobilisation

ARE EXAMINERS HUMAN ?

The recent publication of letters in the medical press on the subject of examinations, examiners, and examinees is a reminder that the problem does not begin and end with "satisfying the examiners" The examinees and their parents must also be satisfied, more or less, not to mention co examiners or assessors Prof Pierre Mauriac[1] has unburdened himself on this subject with disarming frankness and in the spirit of a co examiner rather than in that of the examiner himself Is, he asks, strict impartiality possible ? Then he startles his readers by asking if it is even desirable He seems to wish to endow the examiner with a certain latitude in the matter of the personal and moral qualities of the examinee, thus the anonymous examination may not be altogether suitable The reform of the examiner must come from the examinee, and though, in Prof Mauriac's opinion, the examinee may be ill qualified to appreciate the scientific merits of his examiners he is the *best judge of their value as teachers* Among the peccant examiners pilloried by Prof Mauriac is the one who must needs drag in his specialties and expect the examinee to know all about them Another type is he who wanders from his own to other fields, coquetting with medicine if he is a surgeon, and committing "howlers" damaging to his reputation *Prof Jean Delmas*[2] has described yet another kind of examiner who is all out for orthodoxy, giving full marks for the text book mentality, and to whom individuality and independence of thought are anathema It seems from this discussion that the impersonal, machine minded examiner is inhuman, and his erratic, fad loving colleague is even more execrable, and one wonders if the difficulty could not best be met by the appointment of a board of super examiners composed of examinees This is what Prof. Mauriac implies is already the case, but in an informal way

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

BICENTENARY OF THE ROYAL MEDICAL SOCIETY

DURING the week ending Feb 27th the principal celebrations in connexion with the bicentenary of the Royal Medical Society have taken place, and a large number of senior members from all parts of the country attended. The presidents for the year are Dr A G Ross Lowden, Dr R F Dawson, Dr J M Macfie, and Dr A S Crawford, and on Feb 25th they held a reception in the society's premises, which gave senior members the opportunity of inspecting the many improvements that had recently been carried out in the buildings and in the library At the annual dinner on the same evening about 250 were present.

Dr Robert Hutchison proposed, as the toast of the evening, The Royal Medical Society It seemed, he said, to have been robust from its start and it had never looked back Before it had reached its fiftieth year it had built a hall and received its Royal Charter and it had begun to collect a library The modest sum that the society aimed at collecting in celebration of its bicentenary was still far from being reached. Surely the present members would not allow themselves to be out-done in zeal by their forefathers The society succeeded where others had failed because it must have proved itself complementary to the education of the class rooms and the *infirmary* It provided a means of self expression—a safety valve by which the student might blow off as much steam as he liked. The medical student, and never more so than to day, was like the Strasbourg goose he was crammed with facts until he got fatty degeneration not, it was true, of the liver, but, what was worse, of the brain Argument and refutation, ridicule and laughter were the aids to mental digestion, and these the Royal Medical had always provided in abundance Dr Hutchison added that he believed that the most important principle in the training of doctors was expressed in the old saw "you can't have the terriers too soon at the rats"—in other words, you cannot bring the student too soon into contact with the patient Finally, the Royal Medical satisfied the need of the student for the society and intellectual companionship of his fellows It had survived many troublous times, it had seen the '45, the loss of the American colonies, the French Revolution, the Napoleonic wars, the comparative peace of the Victorian era, and the catastrophe of the late war The present times held a new threat to intellectual life in the suppression of free discussion in other countries There was all the more need, therefore, for those societies in which intellectual freedom was the breath of life

Dr Ross Lowden, *the senior president*, said that he intended to send a telegram of greeting to the society's oldest member, Sir James Crichton Browne, who signed the obligation in 1858 He reported that the society was in a flourishing position with 66 new members in the year The bicentenary endowment fund now totalled about £1800, and though the sum aimed at was £3000 it is to be hoped that steps could be taken to preserve the most valuable old books in the society's library

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[1] *Pr méd* Jan 30th 1937 p 165

[2] *Ibid* Feb 27th 1937 p 325

A VOICE FROM THE GRAND STAND

Sir Auckland Geddes formerly a president of the Royal Medical Society gave an address on Feb 20th to a crowded meeting of the society at which Dr Ross Lowdon presided Sir Auckland Geddes said that for many years his path had lain far from the profession of medicine and that he felt like a spectator who on the strength of a precarious membership of his school third XV forty years ago, shouted advice and criticism to the international players The more he had seen of life and death of pain and suffering the more clearly he had realised however that there was never in the real world outside the walls of the medical school and teaching hospital a disease to be treated or an injury to be dealt with: there was just a sick child woman or man to be helped to get well. He had gradually gained the impression that on average young doctors had surprisingly little understanding of man and the medical profession had been losing something of the public s respect and trust The real business of clinical medicine was not science; it was a personal relationship into which much sincerity and medical knowledge were suffused by the physician and trust and some dependence by the patient In this respect there seemed to be a lag in progress at present in the preparation of the medical student for no amount of scientific knowledge unless it be subordinate to understanding the individual, could make the medical man a true healer far too often a doctor attending patients had irresistibly reminded him of a vet attending sheep He thought this was because too many were being demoralised by panel practice and because too many came to the sick room thinking of themselves as men of science fighting disease and not as healers with a little knowledge helping nature to get a sick man well. Beyond their scientific knowledge of man lay an incompletely explored area in which important things happened without discoverable physical cause In spite of the brilliant record and achievement of science they must realise the fact that to day science was running into blind alleys from which it can only emerge by escaping from direct touch with human understanding. They could not grasp man as a whole but this did not mean that it was impossible to improve their understanding On the contrary once they had ceased to fear what seemed to them non rational and recognised that human reason could not grasp all reality they could get to know a good deal about man

TREATMENT OF TABES DORSALIS

Dr Robert Lees gave some observations on the treatment of tabes dorsalis at a meeting of the Medico Chirurgical Society of Edinburgh last week. He analysed the results of treatment in 200 patients who had been observed for a period of not less than two years and all of whom had been treated at the Edinburgh Royal Infirmary He excluded any cases in which the diagnosis was in doubt The routine examination in each case included clinical examination especially of the nervous system and examinations of the blood the cerebro spinal fluid the optic discs the fields of vision and the urine and teeth especially for evidence of local sepsis Several of the patients in the series have been attending the department for as long as 15 years. There were 81 per cent with a positive Wassermann reaction in the cerebro spinal fluid but after two years treatment 73 per cent. of these showed a definite improvement. In general the serological and clinical response appeared to be parallel but there were some patients with negative findings but severe clinical symptoms All cases that became negative under treatment remained negative when it ceased. The treatment consisted of the administration of tryparsamide intravenously and bismuth intramuscularly Both injections are given at the same time and in courses of weekly injections for ten successive weeks, with an interval of one month when the course is repeated The maximum benefit was seldom obtained in less than two years and sometimes not for five. After the treatment is completed the patient is asked to report every 3–6 months for an indefinite period Very few complications or toxic effects were observed; the danger of toxic amblyopia has probably been exaggerated and Dr Lees does not hesitate to treat cases of optic atrophy with tryparsamide He reported that in patients with tabetic pains there was definite improvement in 75 per cent; in 16 per cent these were unaffected while in 5 per cent they became worse As regards ataxia, 65 per cent improved 6 per cent. became worse, and the remainder showed no change. In two cases of rectal crises the results were very satisfactory Charcot s joints occurred in 4 per cent and the treatment appeared to benefit the general condition of these patients. There were definite signs of optic atrophy in 12 per cent of the series Tryparsamide therapy was carried out with the careful coöperation of ophthalmologists who observed the state of the visual field All methods give poor results with this condition, but both in the present series and in a series previously investigated by the late Dr David Lees 50 per cent. of those treated did not progress to complete blindness Cases of juvenile tabes usually respond well to treatment. Finally Dr Lees concluded that the treatment carried out was justified by the satisfactory results obtained In his opinion a very prolonged period of treatment and observation is essential

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INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED FEB 27TH 1937

Notifications—The following cases of infectious disease were notified during the week: Small pox 0 scarlet fever 1019; diphtheria 1252; enteric fever 45; pneumonia (primary or influenzal) 1372; puerperal fever 53 puerperal pyrexia, 107; cerebro spinal fever 15; acute poliomyelitis 4; acute polio-encephalitis, 2; encephalitis lethargica 8 dysentery 21; ophthalmia neonatorum 71 No case of cholera plague or typhus fever was notified during the week.

Notifications of acute pneumonia were much below expectation: in London 39 per cent below; in the country as a whole 16 per cent below

The number of cases in the Infectious Hospitals of the London County Council on March 5th was 3353 which included: Scarlet fever 858 diphtheria 1037, measles, 30 whooping cough 584 puerperal fever, 17 mothers (plus 10 babies); encephalitis lethargica 283 poliomyelitis 3 At St Margaret s Hospital there were 19 babies (plus 8 mothers) with ophthalmia neonatorum

Deaths—In 122 great towns including London there was no death from small pox 4 (0) from enteric fever 7 (1) from measles, 5 (1) from scarlet fever 31 (10) from whooping-cough 28 (1) from diphtheria 43 (11) from diarrhœa and enteritis under two years and 212 (23) from influenza The figures in parentheses are those for London itself

Of the 204 deaths from influenza in the great towns of England and Wales outside Greater London the largest totals were reported from Liverpool 17 Manchester and Birmingham each 11 Newcastle-on Tyne 10 Corresponding figures for Scottish and Irish towns were Edinburgh 5 Glasgow 9 Dublin 6 Belfast 6

Leeds Liverpool Birmingham and Bristol each had a single death from enteric fever Hull reported 2 deaths from measles Fatal cases of whooping-cough were scattered over 19 great towns: Leeds reported 3 Birmingham 2 Fatal diphtheria was reported from 22 great towns: 3 from Liverpool 2 each from Manchester and Sheffield

The number of stillbirths notified during the week was 277 (corresponding to a rate of 13 per 1000 total births) including 30 in London

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month, his name can be seen later in the half yearly index

FROM A RUSTICATING PATHOLOGIST

III

Dr Carrel's "Man the Unknown" is a strange book. In manner it is thoroughly up to date for there is no *continuum* it proceeds by quanta and school children who were set to parse it would have to get out of their difficulties by classing a good proportion as "exclamatory" And it is said to have been a best seller in America It will be interesting to see whether it has the same popularity here still, our literary tastes are peculiar, are we not said to be the only people who find *Punch* funny? But in whatever style he writes, Dr Carrel succeeds in getting his meaning across as well as many other people, and it is naturally with the meaning that we are concerned Knowing something of his laboratory work on tissue culture, the healing of wounds and suchlike matters, we should have suspected or even been convinced that he was one of those austere men of science who hold that the real truth is bounded by what can be ascertained by exact quantitative experimentation, indeed, it has seemed perhaps sometimes that his passion for meticulous preciosity in method has taken up more of his attention than the results he has been after What is so interesting about the book is that it reveals him as quite a different kind of man. As one would expect, there is much excellent exposition of what may be called conventional scientific knowledge about the body and its tissues But he goes far beyond this He is prepared to believe in what he cannot understand, which has commonly been supposed to be the mark of the loose minded fellow in contrast to the real scientist The most scientific scientists of course believe, perhaps inadvertently, in some things which they cannot understand—e g, gravity—and may hold that some result is the effect of a cause when they cannot trace the intermediate steps But this is not considered in general quite the right thing to do Yet Dr Carrel (see particularly his chapter on "Adaptive Functions") is frankly teleological, the body reacts in such and such a way to changes in itself or its surroundings in order that it may reach a certain end, the tissues behave in short as if they were sentient human beings A number of people who have looked at the known facts with such honesty as they could muster have come to the same conclusion and it is likely enough that it is as near the truth as we can get, at any rate just now, *I believe myself that the most fruitful* way of looking at pathological reactions is from the end which they aim at or reach, but the point of view is unconventional, and it is interesting to find it in Dr Carrel most people still hold that what the body does is determined by the mechanisms which are available, and it is *not long since the late regius* professor of physic in the University of Cambridge declared that neo vitalism died with J S Haldane Going further still, we find that Dr Carrel believes that intuition is a valid method of scientific discovery, and says "clairvoyance and telepathy are a primary datum of scientific observation" though the phenomena are exceptional and elusive and cannot be reproduced at will, he also agrees that some miraculous cures are effected at Lourdes, though seldom This open minded attitude on matters to which orthodox science is commonly wholly indifferent or hostile seems to me admirable, if only because it may stimulate more detailed investigation In fact there is a great deal to be said in favour of his nonconformity There is a book of which all I remember is that it was bound in black and was by a Scotch presbyterian minister intimate with Kelvin and Tait and other *great discoverers of his time,* which argued that scientific progress seemed to depend on something very like the messages from Heaven received by the Old Testament prophets And intuition is obviously important, however it comes about, it may be the unconscious summation of knowledge and experience, it may be a capacity to hear a still small voice, but whatever it is, it works Telepathy too appears to be simple fact of experience, uncontrollable, useless, not very interesting And if a blister with all the classical phenomena of local inflammation can be produced by suggestion, as it undoubtedly can, it is not inconceivable that prayer may be helpful in getting sick people cured, as Dr Carrel thinks And he is, as he says in the preface, a man of science

* * *

Dr Carrel deals as much with questions of opinion as with questions of fact And his readers' confidence in his opinions would be the stronger if they could feel quite sure of his facts It is difficult to avoid a certain amount of doubt He says for instance that "we know that in countries where water is rich in calcium, the skeleton becomes heavier than it does in regions where the water is quite pure" Do we? Is it really true that people who drink the almost distilled water supplied *to Glasgow have* lighter skeletons than the corresponding Londoners whose water contains 20 or 30 times as much calcium? If it were, it would be strange, for the water we drink is not the main source of the body's calcium And the hygienist may well ask where is the elysium when the water is "quite pure" Or again "It is remarkable that mental diseases by themselves are more numerous than all the other diseases put together one person out of every twenty two has to be placed in an asylum at some time or other" What does it mean? At a modest computation 21 9 out of every twenty two people suffer from some other disease at some time or other But of course all persons with "mental diseases" are not detained in institutions, which really take notice of disorders of conduct rather than disorders of mind, if a man walks down the street every day whistling "Slippin' round the corner" he can still go free as a respectable citizen, whereas if he goes without his trousers he will probably be shut up Is it both or neither or which that is afflicted with mental disease? *Dr Carrel would do well to reconsider his terrifying statement,* which frankly is not the sort of thing that we have learned to expect from a man of science" or from the Rockefeller Institute, not because it is questionable but because its meaning is quite obscure Or *take this piece of voluptuous fiction* "Moral sense is almost completely ignored by modern society Those who discern good and evil, who are industrious and provident, remain poor and are looked upon as morons Artists and men of science supply the community with beauty health and wealth. They live and die in poverty and so on for about a page. What a fantastic travesty of a world permeated all through with goodness and kindness and justice—yes, even in New York—and where even most scientists are not at all badly paid One might as well say that No Mean City is an accurate view of a cross section of the citizens of Glasgow It is perhaps right to accentuate the existence of the few bad and the more foolish people there are in the world because they want dealing with but to brand all men as robbers because of a few thieves or all women as loose living because of a few prostitutes is the negation of all that science has ever stood for Man has a natural passion for righteousness just as he has a natural passion for knowledge and the vast majority of mankind tend to do good in so far as it is known to them Without these natural qualities education would it seems to me be futile we cannot alter man fundamentally our business is to make the best of what is there It is with shame that I recall and recite a rebuke I had not so many years ago

Jones was extraordinarily nice about that business I said, and the answer came Why do you think so badly of him ? Isn t it quite ordinary for people to be nice ? *Of course it is and perhaps it is just a* general realisation of this that leads to the worser daily papers (and to some extent also the best) and the News Bulletin copyright reserved that comes over in that honeyed voice and Dr Carrel to draw such a horrid picture of the world what is normal and customary has no news value Similarly people glorify the past and talk of the good old days which I have no doubt were on our present standards as bad as bad could be. It is entirely false for example to suppose as many people seem to do that our ancestors built better houses and made more durable furniture than we do to day What they rightly admire is the selected few examples which survive; the majority of houses built 200 or 300 years ago have disappeared altogether because they were intolerably bad most of those which are still here are poor places to live in—damp dark with ill fitting doors and windows for living in rather than looking at they are nowhere near the council houses of the last 20 years So too with the body We hear a great deal of physical degeneration and the evils of coaxing unwilling infants to survive but judging the past as best we may it seems clear that the people of this country are now more fitted to live human lives than they have ever been before my mother wore a cap and sat in a chair at an age when my wife does a good day s gardening and enjoys it Look at the amount of illness people say yes, but look at the change of standard Hospitals used to be places for people to die in and the doctor was summoned as the last resort in a desperate situation he is sent for now if the patient has a suspicion that he may be going to be ill to morrow which is why there are now more doctors and busier ones than there used to be and at the same time on the same criterion less illness The present is indeed very much better than the past and the intellectual and moral gain is as great as the physical. Some of my friends are very loath to believe that people now are better than they were but it seems to me one of the most patent facts of experience that during my own life time there has been a substantial increase in the virtues which I can perhaps best sum up as disinterestedness—unselfishness kindness generosity toleration The reason for it I would not try to make out but there it is and it is a pleasing and encouraging thing to think about It is as nasty and depressing to reflect that we are no doubt accepting many things as tolerable or even admirable which in another generation or two will be recognised as abominable our sins and negligencies are bad enough but I suspect that our ignorances are far worse.

* * *

All this reminds me of some strange talk that has been about in recent years about what is called the impact of science on society Presidents of the British Association and others have gloomily wondered whether man s morals are up to coping with the powers which science has placed in his hands they suggest that unless we destroy science, science will destroy us and propose that there shall be a ten years holiday from further scientific discovery to give us a chance to recover our equilibrium. What they really seem to mean is that it is a pity that engineer s brains should go into bombing aeroplanes and motor cars which facilitate large-scale burglary or that chemists should spend their energies on poison gas but they express themselves and perhaps actually feel the situation in more general terms, and there seems to be some chance that nervous ladies will be looking under their beds for scientists as well as communists. There is in short a feeling about that science is something to be afraid of It is hard to understand why we have known for a long time that it was one of the attributes of God to tell the number of the stars and call them all by their names The current feeling seems to come in the main from two misconceptions.

* * *

The difference in the machinery of our lives which has been made by scientific discovery in the last forty years is in general greatly exaggerated and the unfortunate hyperbolic habit of talk which has grown up is always finding that some pretty ordinary event is an unparallelled situation or an unprecedented crisis and the world the Empire the church and what not are always arriving at cross roads the places where suicides were buried and where black cats had their throats cut on Friday nights to get blood to cure warts Do we not grossly over estimate the importance of what happens in our own time ? Aeroplanes motor cars and wireless are noisy and *dramatic* but do they really represent more than quantitative improvements on ships which could sail against the wind hard roads and the old semaphore which itself was not much quicker than the method of throwing a message wrapped round a stone from hand to hand ? We can hardly doubt that these things are genuine improvements: the pictures of heaven which men have drawn differ in detail but they *all* agree that time and space are abolished and anything which helps towards this ideal is welcome But they do not seem more dangerous than most of the other improvements which man has made—sharp knives the possibility of keeping cattle alive through the winter on cabbages and roots the rotation of crops steam engines and all the rest Everyone of these can be used to promote the ends of bad as well as of good men If people want to kill one another they will use the best means that are available and if these are denied them they will use the next best and so on What [illegible] all so much is to realise that men of ill will [illegible] a splash in the world for this [illegible] is in no way to blame and to wipe it [illegible] prevent its further progress would have not [illegible] effect

* * *

And the existence of men of ill will [illegible] difficult to avoid Men have always dreamed [illegible] knowledge would be complete and when everyone would be good. But the ideas are illusory the world is not made in that way, comfortable as it would be to think so The horizon of goodness, like the horizon of knowledge, fades for ever and for ever as we move, what was good yesterday may be bad to day, and what is good to day may be bad to morrow It is not long since murder was nothing more than a civil offence against the dead man's relations, lying was so little condemned that if it was profitable to the liar it counted as a virtue and so it is now in some savage tribes, unkindness was not one of the seven deadly sins, it was as lately as June, 1785 that Thomas Clarkson rode down the hill to Wadesmill beyond Ware and resolved to devote his life to the suppression of slavery as the monument there commemorates And the course of the evolution of our moral sense is certainly no haphazard series of accidents, for it has always run in the direction of realising that what was thought good is actually bad usury is the only exception I can think of There are therefore at any one time various human actions about which there is a difference of opinion bull baiting is bad, fox hunting is doubtful, drunkenness is perhaps just about ceasing to be doubtful, gambling is doubtful and I remember Webb saying in a Fabian lecture "I wonder when we shall have a stop in the mind about living on rent", J L Paton said that unpunctuality was a sin because it was selfishness and some people (including myself) think that the Zoo is not at all nice If we include other countries than our own the range of opinion about right and wrong becomes much wider Hence good and evil are relative to the prevailing conditions and there is no more prospect of a state of existence in which there is no evil than there is of one in which we know everything Quite likely man is, on the average, always about the same distance from the ethical horizon which he can see, some get nearer than others and the laggards are the bad people who make such an impression on Dr Carrel It all follows from the "Origin of Species" and the normal curve of variation

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CORRESPONDENCE

THE DANGERS OF OVER-STATEMENT

To the Editor of THE LANCET

SIR,—Are we not becoming too violent in our language when we criticise treatment of the past while advocating new methods? Thus I read in your journal to day "Failure to apply this treatment is tantamount to criminal neglect" Conduct, be it noted, that not only lays the practitioner open to damages in a civil court but also should be punished by imprisonment In his memoirs Mr J A Spender tells how as he became experienced with leading articles he found himself writing the more moderately the more strongly he felt on the subject in hand. It is a pity, therefore, that language so strong, which could never be supported in either a civil or a criminal court, should be used to damage a good cause

Those who have, from time to time to act as mediators in cases of a quasi judicial nature in a committee of doctors and of medically minded laymen will realise how hard it is to weigh the pros and cons of any complaint in the face of a statement such as this How much more difficult it must be when it is a question of defending a case in a court of law in which the obiter dicta of the great carry so much weight On this occasion you were quoting the words of a surgeon whom to day we all respect and a teacher from whom we all have learnt May I, however, point out that there seems to be a growing tendency in your journal to make statements in a phraseology which is more dogmatic than the judicial nature of the anonymous editorial chair seems to warrant Thus in August last (1936, 2, 270) you wrote in an annotation, ' The advantages of basal narcosis for children are undoubted, whatever opinions may be held with regard to the same procedure for adult patients This is a hard saying for one who is beginning to wonder whether these same drugs give all the advantages they are reputed to do, and whether, except under the rarest circumstances, they should ever be used in children Again in a leading article on Dec 5th last (1936, 2, 1339) you wrote that " it has become an imperative duty to employ them [i e, a new proprietary drug or its substitute] in severe forms of streptococcal infection" Before reading Dr Colebrook's article in your journal of that date I had not heard of such drugs In the last twenty years many proprietary drugs have been put on the market that were to cut short the illness in streptococcal infections and that have all proved valueless We may therefore forgive the senior members of the profession if they do not rush at every new one that comes along One might rewrite the sentence thus "It looks as though, at last, a drug has been discovered that may help us in the management of the severer forms of streptococcal infection" But we should not criticise any experienced practitioner who, faced with a problem that he knows he has a good chance of solving, refrains from using a drug that may so alter the course of the disease that it disturbs his judgment in the management of the patient It is not until these drugs have been proved to act with the certainty of diphtheria antitoxin in the treatment, or of typhoid inoculation in the prevention, of an infective lesion that we should use the word imperative in reference to them Are we, for instance, certain that so strong a word should be used even for the exhibition of quinine in malaria or the arsenical compounds in syphilis?

May I therefore urge that, while we should keep in touch with youth by understanding and even sharing in their exaggerated terminology in our lighter moments, yet we should, in our practice and teaching of medicine, retain a balance of expression and the use of words in meanings that they have come to hold and not in those weaker ones that they may bear in the future

I am, Sir, yours faithfully,

London March 6th T B LAYTON

⁂ Sir David Wilkie's words were "The profession has never sufficiently recognised the value of the contribution made by Bier, in the shape of passive congestion, for such infections I would go so far as to say that to omit the use of passive congestion, in acute infection with lymphangitis, is to be guilty of criminal neglect" An advantage of strong statements of this kind is that they arrest attention and in welcoming Mr Layton's wise criticism we are glad to remember his own ability to shock his readers into thinking for themselves —ED L

MANIPULATIVE SURGERY

To the Editor of THE LANCET

SIR,—As I know demands upon your space are numerous perhaps my esteemed friend Mr Blundell Bankart, will forgive me if I confine myself in this letter to what is the all important question as to whether I do or do not cure true recurrent dislocation of the shoulder by my methods of manipulative surgery? Mr Bankart criticises Case No 1 in Mr Rowley Bristow's report of the demonstration I gave at St Thomas's Hospital on July 22nd last Here is the full story

This patient wrote me as follows on July 11th, 1936: In 1921 I dislocated my right shoulder and this has continued to recur at intervals which have recently become frequent I have consulted several doctors who have told me that there is no cure and that the state of my shoulder must be regarded as permanent'

I afterwards saw this gentleman and selected his case for demonstration first because of the length of time his disability had lasted secondly because of the great number of times the dislocation had occurred; and thirdly because of the unanimity of the verdict of the several doctors that his case was incurable

He told me that the first time the shoulder dislocated the pain of reduction was excruciating but that each successive time the dislocation recurred the pain of reduction became less he never was able to reduce the dislocation himself but relied on the skill of a friend who became very expert

I performed my first and only manipulation on this patient under gas anæsthesia at St. Thomas's on July 22nd 1936 before about a hundred members of the British Orthopædic Association and immediately afterwards made him do movements calculated to test the shoulder to its utmost. The joint stood the trial perfectly neither in the amphitheatre nor in the ante-room later was any suggestion put forward that the case might be other than one of true recurrent dislocation On Sept 7th six weeks after my manipulation the patient wrote My shoulder has given me no trouble of any kind in spite of the fact that my exercises have not been very regular and that I have bathed several times, executing the side stroke and over arm two feats of which I was formerly incapable I feel that I owe you a very deep debt of gratitude

On Sept. 16th this patient was re examined by several surgeons at St Thomas's Hospital and confirmed the above statement and added the joint was 'perfect Not until then was it suggested that the case might not be one of true recurrent shoulder dislocation after all! I at once said that if this is not a case of true dislocation what other disability is there which so closely resembles such a condition and which "several doctors would describe as incurable? I then turned to one of the hospital surgeons standing by and said Have you a case of recurrent shoulder dislocation in the wards? He said, Yes The patient was brought up I examined and questioned him before the surgeons As he was a hospital patient I asked if they were fully satisfied that the case was one of true recurrent dislocation of the shoulder They said they were and I asked if I might operate at once The permission of the patient having been obtained gas was administered and I dealt with the case On Sept 24th 1936 10 days after my operation this patient wrote: My shoulder has not given me any trouble " On Oct. 10th he wrote: So far I have not had any trouble with my shoulder at all On Nov 12th he wrote Up to the present my shoulder has given me no trouble at all On Feb 2nd, 1937 he wrote: So far my shoulder has behaved excellently and has given no trouble at all.

In these two cases the first has only had two or three relapses in eight months against frequent dislocations—sometimes daily—in fifteen years whilst the second has had no further trouble at all. Both patients I believe will be completely and permanently cured judging from my former experiences in such cases I am Sir yours faithfully

Palace Hotel, Jersey March 8th	HERBERT BARKER.

CHEST LEADS IN ELECTROCARDIOGRAPHY

To the Editor of THE LANCET

SIR —I have read with great interest the two papers and the annotation in your issue of Feb 27th. It is certainly most desirable that the method of applying the electrodes should be standardised and that as soon as possible to avoid needless confusion in an already complex subject

The preference expressed in your columns for the method used by Drs Willcox and Lovibond will naturally carry great weight, and deserves careful consideration But there is much to be said for the retention of the original method of leading used by Wolferth and Wood and by Wilson (*Heart* 1933 16 153) the method which is almost universal in the United States and which I note has been adopted in recent work from Vienna published by Freundlich

Drs Willcox and Lovibond state that the fourth lead can be made to conform to the conventional standard leads by simple reversal of the electrode connexions This is true in a clinical sense—i.e as regards the general form of the normal tracing—but it should be realised that chest leads differ radically from the standard limb leads The potential variations are led off in the latter from points which are far and approximately equidistant from the heart the points of attachment of limbs to trunk serving roughly as the angles of the familiar Einthoven triangle In chest leads however one electrode is much nearer the heart than the other and as Willcox and Lovibond rightly state the anterior electrode is dominant in virtue of its proximity to the contracting organ There is thus a fundamental difference between a standard lead electrocardiogram the algebraic sum of potential variations of equidistant points and the chest lead electrocardiogram which reflects particularly the potential variations under the anterior electrode No modification of technique can render them truly comparable, though a specious resemblance may be achieved.

Further in physiological studies such as those of Craib and of Wilson it is usual to apply the electrodes to strips of muscle, &c. in such a fashion that activity under the 'exploring electrode causes upward deflection of the string—i.e the right-arm contact of the string is led off from the muscle the left arm contact from a distant or indifferent point. Such leads were used by Wilson and his collaborators in an investigation of experimental coronary occlusion by chest and direct leads in 1932 From this work it would appear that using Wood and Wolferth's technique the rapid swing-over from negative Q to positive R (well seen in Fig 1 of Dr Freeman's paper and in Fig 1c of Drs Willcox and Lovibond's) denoted arrival of the excitation wave below the anterior electrode—that is corresponded to the intrinsic deflection of Lewis in direct leads from the muscle. As this deflection denoting activity below the anterior electrode is *upward* when the R A contact is on the front of the chest, the Wood Wolferth technique seems to parallel most closely the leads used in physiological work That such a parallel is desirable needs no pleading, for in the last resort our understanding of these deflections, like all our electrocardiographic lore, depends on correlation with physiological experiment

The question thus is one of considerable complexity, and a decision once reached will prove of importance to a great body of clinical and other workers I question whether a decision in favour of either method could be reached with the facility suggested in your last issue, and I think that the matter is one which might well be referred to a representative body of cardiologists for settlement

I am, Sir, yours faithfully,
IAN G W HILL.

Department of Medicine University of
Aberdeen March 1st

THE CONSOLIDATED WORLD RESEARCH SOCIETY LTD

To the Editor of THE LANCET

SIR,—I have read with much interest your article under the heading Medicine and the Law Hire Purchase Research, in THE LANCET of Feb 6th, as my society, the London and Counties Medical Protection Society Limited, has for a considerable period dealt with a number of complaints by its members against the Consolidated World Research Society Ltd Not only has it advised its members to discontinue its subscriptions to the Consolidated World Research Society Ltd, but has offered to defend them should proceedings be brought, and in collaboration with its solicitors has repeatedly invited the Consolidated World Research Society to take proceedings, but in no instance has this challenge been accepted This challenge is still outstanding and will be accepted whole heartedly should the opportunity occur

I am, Sir, yours faithfully,
C M. FEGEN,
Secretary, London and Counties Medical
Protection Society Ltd
March 4th

FINGER-PRINTS

To the Editor of THE LANCET

SIR,—Your annotation (p 523) on Wolfgang Abel's observations gives me the opportunity to raise some controversial points Specialists in a number of different ologies are now using finger prints as a tool and in some instances misusing them. Abel's work is the sequel of a laborious series of investigations, carried out in Norway for the most part but confirmed elsewhere, designed to throw light on the interaction of heredity and environment in the formation of papillary patterns Bonnevie, to whom we owe most of our knowledge, some four or five years ago reached the following position, and after checking various references in Abel's paper I believe it still holds good [1]

Only three Mendelian couplets are involved A factor, VV, governs the thickness of the epidermis in early embryonic life, thick skin is dominant to thin, and the heterozygote is intermediate Two other factors, RR and UU, govern the formation of epidermal pads on the radial and ulnar fingers respectively Presence of pad is dominant to absence of pad, and the heterozygotic condition leads to thin pad Three systems of ridges occur a system starting at the nail fold and growing over the top of the finger a system starting at the joint fold and spreading distally, and a system beginning in the middle of the ball of the finger at the point where two twigs from the lateral digital nerves meet These three systems meet at the so called triradius or delta, and can readily be identified by a glance at the finger tips except in the case of the triple dominants who may have no loops or whorls but only arches in which case no delta exists

The endless variety of finger prints comes about in a curious fashion The effect of high pressure in the connective tissue of the finger ball is to expand the finger tip into a ball, which is perfectly regular so long as the epidermis is of even thickness and elastic And the triple recessive accordingly sometimes shows regular whorl or loop formation on all fingers In most instances, however, the nerve twigs meet more to one side than the other, and pad formation, when it occurs is also slightly asymmetrical The whole mechanism is obviously highly unstable and easily affected by various external influences Abel now brings forward evidence, in confirmation of various experiments of Bonnevie, that generalised as well as localised changes of pressure can occur in the finger tips, which may actually burst the embryonic epidermis and lead to changes obviously recognisable in later life

This apparently wayward erudition has a very practical bearing on medical research

Stocks [2] in 1930 claimed to be able to separate twins in nearly every instance, into identical and fraternal pairs by means of their finger prints No special acquaintance with the problems of twins or of heredity or of finger prints was shown in the paper, presumably because the author thought it unnecessary to the development of his argument The two weak points of the paper, as Stocks himself realised, were firstly that the criterion of resemblance of the finger prints was entirely subjective, and secondly that no evidence was advanced that an accurate division of the material into identical and fraternal pairs had in fact been made The second point is unimportant and I do not stress it To return to the first point, everyone knows the rough classification into whorls, loops, arches, but the difficulties of intermediate forms are not so widely realised Galton at one time invented as many as 53 different categories, and Bonnevie prophesied that a continuous series might eventually be found In practice the expert see the differences and the inexpert the resemblances Stocks apparently can control his judgment fairly well He writes "A pair of finger prints were classed as similar, when they were not merely of the same class (arch, whorl or loop) but so much alike as regards general configuration, inclination of axes, position of deltas and numbers of ridges, as to make them appear the same to a casual examination without actually counting the ridges or looking for minutiæ" In other words, Stocks managed to keep his eyes sufficiently half shut to identify identical pairs with the same Mendelian composition Other observers however with an equally large material at their disposal have been unable to utilise Stocks' methods without other aids Theoretically too the method is unsound Especially in an inbred area, one must expect to meet with fraternal twins from time to time with the same U V R genetic formula, while owing to the frequent anastomosis of the placental circulations in identical twins, considerable differences in their intra uterine environment occur This is of course the explanation of why Siamese twins so seldom resemble each other These points have been clearly realised by interested biologists for a number of years, and so when it became necessary to look for points to classify twins, characteristics involving a large number of different Mendelian factors comparatively stable against environmental influences were sought for There is sufficient evidence that the methods employed by the Kaiser Wilhelm Institut für Anthropologie which is aiming at a complete follow up of all German twins and has an enormous material at its disposal are accurate and it is a pity that English observers do not report interesting cases in a form which makes them reliable evidence for the world literature.

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[1] See Abel W (1930) *Z Morph Anthr* 36 1 for literature

[2] Stocks P (1930) *Ann Eugen, Camb* 4, 59

Lastly might I add a few words on the point of twin research? Anyone who has the chance to investigate half a dozen identical pairs of twins where one member has a consistently higher blood pressure than the other member of the pair or where arterio-sclerosis, gastric ulcer diabetes allergic disease or any other common disease has an asymmetrical incidence learns far more about the practical ætiology and prevention of the disease than any laboratory worker or hospital specialist. Twin research is the only method of distinguishing between hereditary factors intra uterine factors and postnatal factors. That is why these enormous efforts are being made in Germany to clarify the biology of twins. We may be able to adapt German X ray apparatus, endoscopical instruments and drugs to our purpose but their twin results will not be applicable, because the two unknowns involved in the sum Heredity × Environment in this country are obviously different.

I am Sir yours faithfully

Oxford March 1st. DENYS JENNINGS

RADIOGRAM AND RADIOGRAPH

To the Editor of THE LANCET

SIR,—The varying opinions expressed in your correspondence columns (Jan 23rd to Feb 13th) show that unanimity of choice is not possible as far as the words in present use are concerned and it is obvious that none is completely satisfactory. Your stated preference for the word *radiogram* however is a tangible point, and in my opinion a disturbing one, and I am addressing you on behalf of the British Institute of Radiology to urge you to reconsider your decision as to the use of that word.

The etymological points having been exhaustively reviewed I should like to confine myself to the question of usage. Although the word *radiograph* actually appeared first in medical literature *radiogram* was not far behind it and forty years ago their chances of survival were practically equal. Very soon however the *radio telegram* made its appearance and was most reasonably shortened to *radiogram*. The word has been in use in that sense ever since and the fact that the same word has lately been adopted as a contraction for *radio gramophone* makes it still less desirable to try to bring it back into medical phraseology.

The word *radiograph* on the other hand has been used by most radiologists and many of their colleagues ever since as a contraction for what the general public calls an *X ray photograph*. It is by no means an ideal word especially as it may also denote "an instrument for recording intensity and duration of sunshine." There can be no doubt however as to which of the two meanings is more generally understood. If a better word than *radiograph* could be coined it would be very acceptable but there appears to be no valid reason for discarding it for a word which has nothing more to recommend it and which is already in general use under an entirely different meaning. There is something to be said for *X radiograph* but it is clumsy and would almost certainly be shortened to *radiograph* before long.

I brought this matter up for discussion at last month's meeting of the medical committee of the British Institute of Radiology which considered that nothing had occurred to alter the opinion which it recorded in November 1934 when the following resolution was passed. "After discussion it was unanimously agreed that in referring to the photographic product of an X ray examination the word *radiograph* should be used both as a noun and as a verb in the same way as the word *photograph* is used. It was pointed out that this is correct according to the Oxford Dictionary."

I am Sir yours faithfully

R BOULTON MYLES

Hon Medical Secretary British Institute of Radiology

March 8th

p-AMINOBENZENESULPHONAMIDE IN BACTERIAL MENINGITIS

To the Editor of THE LANCET

SIR,—We have shown that *p* aminobenzenesulphonamide has a protective action in meningococcal infection of mice (*Lancet* 1936 1 1286 1937 1 16). In the second of these papers evidence was adduced that the drug appears in the cerebro-spinal fluid of rabbits after oral administration. A small inoculum of streptococci failed to grow in the fluid of the treated rabbits whereas a similar inoculum grew in the fluid taken from the untreated controls. Recently Dr Fuller (*Lancet* 1937 1 194) has designed a chemical method for the detection of the sulphonamide in the blood and urine of treated animals. By applying this method it is possible to show that *p* aminobenzenesulphonamide, given orally appears in the cerebro spinal fluid in remarkably high concentrations. For example a rabbit weighing 3 kg was given 3 grammes of sulphonamide by the mouth; four hours later 1 ml. of clear cerebro-spinal fluid was removed from the subarachnoid space and a blood sample taken. The amount of sulphonamide in the cerebro-spinal fluid was 0 2 mg per ml. and that in the blood was 0 3 mg per ml. The concentration of the drug in the cerebro spinal fluid is thus 1 in 5000 which has been found sufficient to exert a strong bactericidal effect on the streptococcus in our in vitro experiments with human blood and on the meningococcus in culture medium. This observation illustrates the remarkable ease with which the drug diffuses through the body, and appears to justify the oral administration of *p* aminobenzenesulphonamide in the treatment of bacterial meningitis.

We are Sir yours faithfully

H PROOM

G A H BUTTLE.

Wellcome Physiological Research Laboratories
Beckenham Kent March 3rd

ROYAL MEDICAL BENEVOLENT FUND

To the Editor of THE LANCET

SIR,—It may be of interest to your readers to have a brief summary of the results up to Dec 31st 1936 of our special centenary appeal.

During April 1936 we posted to 44 604 medical practitioners (at a cost of £500 10s) an appeal signed by Sir Thomas Barlow president of the Fund together with an Historical Review of the Hundred Years Work of the Fund compiled by Sir Humphry Rolleston. The centenary fund was opened by the very generous lead of Sir Thomas Barlow who made a gift of £1000 which has been followed by 596 donations amounting to £3570 11s 7d. It was noted that of these 596 donations no fewer than 337 were from subscribers who already gave annual contributions and only 259 donations were from those who had not previously supported our benevolent work. In addition to the above after the despatch of the 44 604 appeals 117 practitioners signified their wish to become annual subscribers to the amount of £149 10s , and a few old subscribers increased their subscriptions, adding a further £23 12s to our annual income

The administrators of the Fund felt that the response from the profession as a whole had been somewhat disappointing, and consequently decided to send out a reminder to the appeal. In November, 1936, at a cost of £65, 6523 letters were posted to practitioners in the postal districts of London who were known not to be subscribers to the Fund and each was asked for a small contribution, such as an annual subscription of 5s To these letters 286 replies were received, and 220 of the recipients signed banker's orders, thereby becoming annual subscribers of a further £101 5s

Our committee has decided to keep the centenary fund open until April, 1937, when the centenary year will have ended. A reminder is being sent this month to every practitioner in England, Scotland, and Wales who has not yet responded to the appeal. We earnestly beg of your readers who are not already subscribers to fill in the banker's order for 5s as soon as they receive this final appeal which will reach them in the course of the next few days

We are, Sir, yours faithfully,
D'ARCY POWER,
Chairman of Committee
LEWIS G GLOVER,
Honorary Treasurer

11, Chandos street Cavendish square,
London, W 1 Feb 27th

PROTAMINE INSULIN

To the Editor of THE LANCET

SIR,—The announcement from four British firms in your last issue that a preparation of protamine zinc insulin of British manufacture will now be available in this country is of great interest to everyone occupied with the treatment of diabetes , it is, however, desirable to emphasise the mild words of warning included in the letter announcing its appearance on the market

The new insulins have come to stay Their slower action not only enables the physician to reduce the number of daily doses in many cases, but reproduces more exactly the theoretical manner of insulin secretion in health , it is probably on this latter account that so many patients report a considerable improvement in their general feeling of well being when the new products are employed But in some instances the change over to one of the new insulins is the herald of a period during which insulin reactions may be frequent and sometimes severe to the point of danger , for this reason the change should only be made when the patient is under close medical supervision, and unless this rule is strictly observed the introduction of the new products may result in major or minor catastrophes liable to mar the record of a most valuable advance in therapeutics

Having employed protamine insulin for many months I am convinced of its immense value, but I am also familiar with the serious difficulties which must arise when any potent drug is introduced with an action sufficiently slow to carry with it the risks of cumulative effect When such a substance has the further property of being variable in its potency owing to changes of the amount held in suspension in different conditions, and of being liable to alteration when slightly contaminated by sterilising fluids, it is clear that considerable care is required in its administration

For these reasons I feel it necessary to express a warning as well as a welcome in this letter

I am, Sir, yours faithfully,
London, W March 8th T IZOD BENNETT

A REVIEW OF GOLD THERAPY

To the Editor of THE LANCET

SIR,—In their article in your last issue Copeman and Tegner write " Other observers (Douthwaite 1936, Pemberton 1936, Hartfall and Garland 1935) have recently reported series of cases successfully treated by means of gold salts, and certain of these express the opinion that such general reactions far from being harmful are almost an essential to success." There is considerable ambiguity in this remark and I, as one of the observers mentioned (the reference, by the way, is incorrectly quoted—it should be 1935), would say that it is not my opinion that the toxic features which may appear during gold treatment have any relation to the ultimate success of such treatment as I did say in the article to which these authors refer Further, it is stated that there is general agreement that the use of gold salts in osteo arthritis may be harmful I would dissent from this, for at the moment I am finding them an increasingly useful remedy in this condition , and I hope shortly to publish my results

I am, Sir, yours faithfully,
Liverpool, March 6th H S PEMBERTON

ANALGESIA IN LABOUR

To the Editor of THE LANCET

SIR,—The following case of temporary sterility followed by a normal labour under modern methods of analgesia presents points which may be of general interest, the patient being herself qualified and in medical practice

At age 34, after five years' married life, she was admitted to hospital for lipiodol injection and radiography The first injection showed tubes of abnormal outline and doubtful patency , and three small opacities in the position of the left ovary The second injection under greater pressure appeared to open up the tubes and the radiogram showed lipiodol in the peritoneal cavity and the outline of a dermoid cyst, the three opacities being teeth The potential risk of torsion and possible effect as a deterrent to pregnancy were considered adequate grounds for removing it The cyst was found to be inseparable from the left ovary and the mass was removed in toto , a blood cyst was excised from the right ovary, whose covering was abnormally thick , and a pathological appendix was removed at the same time

Five months later two injections of 1 c cm Antuitrin S were given at intervals of 36 hours at the beginning of a menstrual cycle , the second produced distressing symptoms suggestive of hypoglycæmia, but not the desired result Six months later again four injections of 0 25 c cm were given at intervals of three days, and pregnancy occurred the following month

A first labour at 36 in a patient with a history of rickets in childhood and only moderate muscular development suggested careful watching in the later stages of pregnancy, and Cæsarean section was discussed , however, the child's head engaged satisfactorily and labour was allowed to proceed naturally, although its onset occurred a fortnight after the expected date It began at 3 A.M with a show, and the membranes ruptured at 11 30 A.M , but pains were not evident until five minutes after an injection of Pitocin at 12 30 P M At 2 30 they were beginning to be uncomfortably strong and thenceforth until the end of the first stage patient inhaled 30 per cent N_2O in air from a Siebe Gorman apparatus at every pain For 5½ hours this gave complete relief without affecting the frequency or effectiveness of the uterine contractions and between pains she was able to read and even enjoy a tea party At 5 P M there was barely one finger dilatation At 8 P M the pains began to be so strong as to occasion some discomfort even with the apparatus in action , nevertheless the time seemed to her to pass very quickly as she slept between pains At 10 P M , the beginning of the second stage, gas, oxygen, and ether were given by an anæsthetist at first intermittently; this was less satisfactory because owing to the degree of pain needed to wake her from the anæsthetic administered during the previous contraction she had not time to warn the anæsthetist of the onset of the next one and consequently felt each pain acutely and she found the other very unpleasant So she was after a short while kept under continuously and the baby a girl weighing 9¾ lb was born at 12.20 A.M Forceps were used rather to control the head before crowning than because tractive assistance was needed There was no damage whatever either to mother or child The mother had remained lying down throughout labour she did not even brace her feet against the foot of the bed and pull on a towel or bear down." She did in fact nothing but inhale the analgesic at every pain Twelve hours later she was sitting up in bed enjoying a good meal, and feeling perfectly well without any stiffness or discomfort whatever

To sum up the points of note are (1) an unsuspected dermoid cyst diagnosed solely by radiography (possibly the first occasion on which this has been done); (2) pregnancy following its removal and injections of antuitrin S (there is of course no proof of cause and effect) and (3) the very rapid recovery by a primipara of 36 with only moderate muscular development from the birth of a 9¾ lb baby involving twelve hours of strong and frequent pains after premature rupture of membranes While admitting the unwisdom of generalising from the particular one is tempted to attribute (3) to the very effective analgesia available and suggest that the wearing effect of long drawn-out severe pain in unrelieved labour plays a large part in the exhaustion which too often follows If there is any truth in this the relief of that pain becomes not a sentimental gesture undertaken from humanitarian motives but a duty incumbent on all of us who are engaged in the effort to reduce maternal mortality and industrial disability

I am indebted for permission to publish details of this case, to Mr L C Rivett, who conducted it throughout I enclose my card, but the patient being my wife, ask you to suppress my name

I am Sir yours faithfully
M.A CAMB

Feb 20th

HORMONE TREATMENT OF UNDESCENDED TESTIS

To the Editor of THE LANCET

SIR—We read with interest in your issue of Feb 27th the article by Mr Mimpriss on the hormone treatment of undescended testes and on the whole agree with the views expressed in the letter from Drs Bishop and Hampson who very adequately summarised the present position of this form of treatment in the following week

In our last 90 cases we have seen only 2 in whom genital hypertrophy became marked in the majority there was growth of the testes which was often desirable and in less than half there was increase in the size of the penis insufficient to cause any anxiety We notice that the only patient of Mr Mimpriss's series in whom there was gross hypertrophy was six years old which we consider too young for hormone treatment We are unable to agree with his conclusion that treatment with gonadotropic hormones should be used only in bilateral cases with *subnormal genital development* since we have had numerous successes in patients with unilateral maldescent and normally developed genitalia; and we should like to assure him that we have taken special care to identify the *undescended* and the *retractile* testis In our experience hormone treatment is more likely to produce descent of the testes than pathological genital hypertrophy We feel that his lack of success in causing descent of the testes may be partly explained by the short period of treatment in most of his patients and by the fact that some patients received injections only once a week We consider that twice a week should be the *minimum*.

In our opinion Drs Bishop and Hampson go too far in stating that as the result of continuous administration of gonadotropic extracts antigonadotropic factors are elaborated in the patient's blood stream which may affect the testis adversely since as yet there is no evidence that this occurs in man We are Sir yours faithfully

A W SPENCE,
E F SCOWEN

Dunn Laboratories St Bartholomew's Hospital
and College E C March 10th

A SPANISH AMBULANCE

To the Editor of THE LANCET

SIR,—Since the *fall of Malaga* the plight of the wounded and the refugees in southern Spain is very serious. My husband has taken a British University Ambulance Unit to Almeria and has succeeded in establishing a hospital two front casualty clearing stations a food station and children's clinic outside the town on the road to Lorca He hopes to establish several more at intervals of twenty miles to the point where the railway begins to run again The unit at present consists of Sir George Young Miss Thurstan (the commandant) two nurses, three drivers and two cars and an ambulance A doctor and two more nurses went out last week. There has been a wide response to appeals for supplies for the unit but its work is severely hampered for lack of surgeons

If any fully qualified surgeons were able and willing to go out it is certain that many more lives could be saved Expenses out and back will be paid and keep out there If such there are I should be most grateful if they would get in touch with me in the first place stating for how long they would be able to stay out I am Sir yours faithfully

J HELEN YOUNG

30 Lower Belgrave-street S W 1 March 10th

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Comdrs J B Crawford to *Southampton* A W Cocking to *Pembroke* for R N B J C Brown to R.M Infirmary Plymouth; and L. S Goss O B E to R N B Devonport

Surg Lt Comdrs F W Besley to *Newcastle* J J Keevil to R N Hosp Gt Yarmouth F W Gayford to *Revenge* and F Dolan to *Warspite*

Surg Lt I C Macdonald to *Drake*

Surg Lts. (D) D N Williamson to R N B Chatham and H Bradley Watson to *Pembroke* for R.M Infirmary Chatham

ARMY MEDICAL SERVICES

Maj-Gen G A. D Harvey C M G late R.A.M C is apptd Hon Physician to the King vice Maj Gen T S Coates C B O B E. late R.A.M C, ret pay

ROYAL ARMY MEDICAL CORPS

SUPPLEMENTARY RESERVE OF OFFICERS

Lt R I Leake to be Capt

ROYAL AIR FORCE

Squadron Leader R L C Fisher to Superintendent of the Reserve Hendon for duty as Medical Officer

Flight Lt R E W Fisher to R.A F Station Aldergrove

Flying Offrs J G Rountree to No 5 Armament Training Camp, Penrhos and A R Sibbald to R.A F Depôt Uxbridge

PUBLIC HEALTH

Another Circular on the Public Health Act

In a circular (No 1576) issued last November[1] the Minister of Health encouraged local authorities to study the huge consolidating Act passed in June A second circular just issued (No 1597, 2*d*) deals with Parts V, VI, and VII of the Act which directly affect the professional duties of medical officers of health. The repeal in their entirety of the Isolation Hospitals Acts of 1893 and 1901 will be specially welcome, for the boards and committees of these hospitals had become in some districts an obstacle to progress The most satisfactory of them all, the Metropolitan Asylums Board, has already connived at its own demise, less efficient boards elsewhere have elected to remain in office They are now to be abolished, their powers being transferred to committees of the county councils which can hardly obstruct the policy of their own medical officers The Infectious Diseases Notification Act of 1889 is also repealed and the new Act gives one definition of "notifiable disease" instead of three, although even now it has its drawbacks Notifiable diseases under the new Act are those of the old list of 1889, excluding puerperal fever and continued fever Plague was not in the original list but was made notifiable later under the Notification Act That Act being repealed plague ceases to be notifiable in England and Wales after next Oct 1st unless some special order is made in the meanwhile Pneumonia (primary and secondary), dysentery, poliomyelitis, polio encephalitis, encephalitis lethargica, puerperal fever, puerperal pyrexia, ophthalmia neonatorum, and tuberculosis remain notifiable under various unrepealed Acts and orders But they do not fall within the definition of notifiable disease The lost opportunity of simplifying the notification of infectious diseases and making it of real value in modern epidemiological practice is a bitter disappointment to many medical officers The new Act gives the medical officer no new powers, and so far as clinicians are concerned the notification of disease and the procedures of hospitalisation, isolation, disinfection, and control remain substantially as they were But apart from what directly concerns medicine the Act of 1936 is a great improvement on the old complex legislation Experienced medical officers will have to discard much that has become second nature with them and to learn a new code of procedure, which is full of slight alterations But to teachers of hygiene and to D P H students the new Act should bring untold relief, for, with the rest of the codification which has been promised, it should make the learning of such law as is required by practising health officers a comparatively simple business The present circular mentions every important variation from existing law Where the circular is silent, the new law is the same as the old, or differs from it only in unimportant particulars To administrative officers, the Ministry's circulars are more important than the text of the Act itself

A Hospital Closed for Streptococcal Infection

Dr R CAMPBELL COOKE writes "Owing to the rather highly coloured articles in the daily press about the closing of the Petersfield Hospital owing to infection, it might be of interest to readers to know more details

"Petersfield Hospital has 40 beds, a nursing staff of 10, and a domestic staff of 4 On Dec 11th, 1936, a patient was admitted to a private ward with an acute nasal infection, a swabbing of the nose being returned as staphylococcal, three or four days later she developed two supra orbital abscesses and an abscess in the head of the humerus, and from all three a hæmolytic streptococcus was grown On Dec 26th a sister developed a quinsy from which the hæmolytic streptococcus was grown. Two clean operations of Jan 4th, 1937, broke down on Jan 8th and 10th respectively, and the hæmolytic streptococcus was grown from their wounds

"On Jan 18th all the staff were swabbed and reported to be negative On Feb 4th and 5th the cook and kitchen maid reported throats which were swabbed and returned as positive to hæmolytic streptococcus The staff was reswabbed and 7 of them returned as positive There was no alternative but to close the hospital The Ministry of Health were consulted and they volunteered to type the cases All staff and patients were reswabbed and 8 of these were positive, but the results of serological tests showed that 4 (2 patients and 2 staff, the nurse who had had quinsy and a healthy probationer) were of the same type, 2 (domestics) were carrying a well known epidemic type, and 2 (staff) a group that could be ignored, as it did not belong to Group A

"The hospital has been thoroughly disinfected and will reopen on March 8th"

Facing the Diphtheria Problem

The village of Markfield in Leicestershire has suffered continued recurrences of diphtheria of the grave type which is now prevalent Everything possible has been done to check the spread of the disease By "everything" is meant the sanitary routine and ritual which in the past, when dealing with the less virulent type of diphtheria, sometimes marked time with the natural course of epidemics and ended coincidently with them But Markfield has had no luck and diphtheria continues, much to the chagrin of the medical officer, Dr T W Gordon Kelly, and of the other doctors of the town, who fear, with reason, that the disease will not die out naturally until it has taken its full toll of child life Dr Kelly and his colleagues decided to urge immunisation, and for this purpose a public meeting was held by Mr. J T Jacques, chairman of Market Bosworth rural district council, at which several doctors, the clerk of the council, and other influential persons pleaded with the parents of the district to have their children immunised The *Leicester Mercury* ends its report of the meeting with the following sentence —

> "Before the meeting closed the district nurse announced that she had obtained signatures for 50 children to be treated Several parents signed forms in the room, and others took forms away"

There is agreement that diphtheria can be stemmed by immunisation, which alone of all measures is reliable to keep the disease at its lowest level Experience on a truly vast scale has proved that the incidence of diphtheria, normally one tenth of the birth rate can be reduced nine tenths, and fatality, which is about 10 per cent, abolished Slowly but surely the peoples of the world are accepting diphtheria immunisation, for we have not made the mistake of trying to enforce it, but allowed it to advance on its own merit In most parts of the country there are no real difficulties, nor obstructions to diphtheria immunisation campaigns though, human nature being what it is, it is always easier to get going during a severe epidemic which theoretically is the least favourable time to start Leicestershire however is a difficult field because of its pronounced anti vaccination attitude for the opponents of vaccination are not nice in their discriminations and carry their opposition to all forms of biological therapy The people will not be interested in the fundamental distinction between vaccination by attenuated virus and immunisation by detoxicated antigen but do *appreciate the difference between the bad arm—the* obvious disease —which follows Jennerian vaccination and the silent invisible immunity which follows the injection of antigen

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[1] *Lancet*, 1936, 2, 1168

A condition of success is that there shall be no deception; above all, it must be explained clearly that immunity takes a long time to develop and that inoculation started during an epidemic will not give immediate safety though it is safe to promise that it will reduce the chance of death from diphtheria even if the immunity has not had time to be fully established. Though no question remains of immunisation being at least 90 per cent successful in giving individual protection we are still in the dark as to what percentage of immunes in a population is necessary to prevent epidemic prevalence arising or doing what Markfield wants at present to bring to an end a nagging prevalence which generally is *due to an intermitting carrier* Dr Kelly and the other doctors at Markfield suggested not less than 50 per cent but we do not know for there are many factors at play which are at present ill understood. The objection to immunisation that it increases the carrier rate may be without foundation but we are at present ignorant of the relationship of host immunity to toxin with parasite capability to grow on mucous surfaces

OBITUARY

CHARLES STANSER BOWKER L.R C P, L.R C S Edin

Dr Charles Stanser Bowker who died on Feb 20th last was one of the oldest medical practitioners in Monmouthshire having been in practice at Pontnewydd for more than 40 years He received his medical education at the London Hospital and the Glasgow Royal Infirmary and qualified in 1887 as L.R.C.P L R C S Edin. and L R F.P S Glasg He held resident appointments at the Glasgow Infirmary and was also a house surgeon to the Newport and County Infirmary and the Rotherham Hospital. He went into practice at Pontnewydd nearly 40 years ago and held local appointments as medical officer among others that of medical officer to the Post Office and also medical referee to several assurance companies

Although 50 years of age at the outbreak of the war he joined up immediately and with the rank of captain was in turn in charge of the internment camp at Beachley Chepstow and the embarkation camp at Southampton. At the time of his death he was director of the Royal Gwent Hospital, Newport.

WILLIAM DENISON WIGGINS M.R C S Eng D.P.H

We owe the following to a friend and colleague of the late Dr Wiggins: Dr Denison Wiggins s death at St Alphege s Hospital Greenwich on Feb 26th at the early age of 63 will come as a shock to his many friends in South London He had turned his attention mainly to surgery was a sound operator and his services were in much request in the district outside the hospital. Born in 1873 at Watlington he was educated at Magdalen College School Oxford and St Mary s Hospital He entered the poor law medical service at once and after a year at the Fulham Infirmary became assistant medical officer at Greenwich rising to be medical superintendent a position he held for 25 years As soon as he was appointed he began agitating for better surgical quarters and by great persistence got them so much improved that when the L.C C took over it was recognised at once as a surgical centre and to his intense delight good modern theatres were installed and electrical and light treatment provided for the after-care of orthopædic and other cases At an early date he organised the nursing school on modern lines and will be long remembered for his extremely practical lectures to the nurses. Here again he saw his ambitions realised when during the last few years one of the finest and most modern nurses homes in London was completed. In 1904 he published a book on midwifery for nurses and gave many refresher courses for practising midwives He reported clinical cases occasionally in the medical press and had always an interesting case or cases to discuss with any medical colleague who came in He was rather better than most people at any sport that he took up A golfer of outstanding merit, he was a member of the old Blackheath Golf Club He was a first rate shot a good tennis player and later when his health began to fail he became rather above the average at croquet A keen pigeon fancier he raced his birds as far as the North of Scotland He played an excellent hand at bridge A regular attendant at masonic meetings he had held office as grand master of his lodge Along with all these interests went an insatiable taste for curios of all sorts There was hardly a thing in his house that had not some exciting history behind it, and his collection of china and old furniture was extensive He married Marie Julie Breting of Geneva who predeceased him and leaves a son who is a student at Guy's Hospital and one daughter

ROBERT LACHLAN PINKERTON, M.D Glasg J P

The death on Feb 23rd of Dr Robert Pinkerton of Norwood removes from the Streatham district a prominent practitioner who also worked actively on behalf of municipal interests in the locality Born at Paisley he received his medical training at Glasgow University and graduated M.B C.M. in 1888 proceeding with a short interval to the M D degree He held appointments at the City of London Hospital for Diseases of the Chest and started practice in Harlesden but having been resident medical officer of the Surrey Dispensary he came to South Norwood where he *rapidly* achieved professional success. He was appointed police surgeon to the South Norwood section a position which he filled for over thirty years He was honorary medical referee to the Streatham Home and Hospital for Incurables had been chairman of the Croydon Medical Association and also an active member of the executive committee of the Croydon division of the B M.A During the war he was civil medical officer to the Croydon War Hospital at Norbury while his public activities gained him a position as justice of the peace on the Croydon Borough Bench Here he proved an acquisition, for he was regularly present at the Wednesday morning courts and devoted much time and thought to the exercise of his duties He was a trustee of the Stanley Technical Trade School, and held the position of chairman of the board for sixteen years until his death This occurred suddenly at his home at South Norwood Hill, from a heart attack, but he was carrying out his professional duties to the end. He was 71 years of age

JOSEPH CLOUGH, M R C S Eng

Dr Joseph Clough, who died last week at Moortown, Leeds, had practised in the Hunslet district for over forty years He was born at Cleckheaton and received his medical education at the Leeds Medical School After a period of service at the Bolton Infirmary, he became house physician at the Leeds General Infirmary, being later appointed anæsthetist and assistant pathologist He was a well equipped physician, and contributed occasionally to these columns

FREDERIC WILSON STANSFIELD,
M D Manch , D P H , F L S

We regret to record the death of Dr Frederic Stansfield, for many years a leading practitioner in Reading, where his death occurred on Feb 28th He was born at Todmorden, the son of Abraham Stansfield, a well known botanist and nurseryman, and for a time was himself in business as a fern cultivator, but deciding on the medical profession he entered the medical school of Victoria University, Manchester, with an exhibition in physiology He graduated as M B , Ch B in 1889, proceeding at the shortest interval to the M.D degree, and in 1893 he obtained the diploma of D P H at Cambridge In that year he went into practice at Reading and came to hold a prominent position in the profession, being elected president of the Reading Pathological Society and of the Reading and Oxford branch of the B M.A He maintained his hereditary and early interest in ferns, contributed papers on the filices to the *Proceedings* of the Linnean Society, of which body he was a fellow, and for a time edited the *British Fern Gazette* He was in his 83rd year at the time of his death, and had been a widower some years , his son, Dr T Stansfield, practises in Reading

RICHARD CRESSWELL, M R C S Eng , D P H

Dr Richard Cresswell, who died early this month in a nursing home at Bath, was a very senior member of the medical profession, for he qualified 70 years ago as M R C S Eng , being also one of the earliest to take the diploma of D P H Lond. He held an appointment as a young man at the London Lock Hospital and for a time was in the Colonial Medical Service, being stationed at St Helena He then went into practice at Cheltenham where he was for a period medical officer of health to the urban district council Later he practised in Portishead for some thirty years He was 93 years old at the time of his death

CHARLES WILFRED COGHLAN, L.R C P ,
L R C S Edin

The death occurred recently at Longton of Dr Charles Coghlan, a member of a well known Longton family of doctors He received his early education at Ratcliffe College, Leicester, went for his professional training to Edinburgh, and qualified in 1902 as L R C P , L R C S Edin and L R F P S Glasg He went into medical practice in York but joined up at the outbreak of war and saw much service in the Near East as an officer in the R A M C Soldiering was not new to him for he had served for three years in the Royal Scots Volunteers Unfortunately he contracted malaria and after the cessation of hostilities he retired from practice for a time and travelled much abroad, but later on the death of his brother he returned to carry on the practice But he was practically an invalid for the rest of his life He had an extraordinary medical pedigree, being one of seven brothers, of whom one died in infancy, but the other six all entered the medical profession

PARLIAMENTARY INTELLIGENCE

CRITICISM OF PRISON CONDITIONS

In the House of Lords on March 3rd the Earl of Kinnoull drew the attention of the Government to the conditions obtaining in H M prisons and asked whether the idea of imprisonment to-day was partly one of revenge against the person who had broken the social code, or one of the reform of the prisoner He had recently read a book called " Walls Have Mouths," by Mr Macartney, who was an ex convict The author described his experiences in Wandsworth Prison before he was sent to Parkhurst convict establishment While he was at Wandsworth a man was hanged and Mr Macartney said that one could hear the noise of the drop all over the prison If that was so (said Lord Kinnoull) surely it was barbarous Mr Macartney also said that at Parkhurst in the strong cells there were no windows or heating and men occasionally put in a winter without a blanket, and mostly with only a shirt on Lord Kinnoull did not think that in the winter one would treat an animal in that way Another thing that struck him in reading the book was the unnecessary amount of duplication that went on as one passed from one prison to another The prisoner came before the medical officer and had to give his whole medical history over and over again, although it was all written down on a form in front of the medical officer He could well understand that the unnecessary amount of nagging by warders drove a person nearly insane after any length of time in prison Medical men said that monotony of diet over a long time was deleterious to health In Macartney's book it was stated that the prison doctors at Parkhurst found it necessary to put convicts in hospital for a fortnight—every two years, he thought—and give them hospital diet in order to get away from the routine which they underwent He thought that the food might be varied a little Apparently convicts were flogged with a cat-o' nine tails in all cases of an assault on a warder , that seemed unnecessary brutality When a man lost his reason for a moment no amount of fear of flogging would stop him Macartney quoted cases of men who had been flogged several times, but this had not deterred them, but had made them more like brute beasts He took the view that nearly all people who were convicts had a mental kink, and he thought that at any rate 90 per cent of them would be far better treated by psychologists than by prison treatment He found that where people had been sent in for observation because their behaviour was somewhat peculiar they had been kept in the observation landing for years until they had been let out and when let out they had been promptly discharged to the county asylum It seemed to him utterly stupid, when quite clearly it must have been known over a number of years whether a person was mentally deficient to keep him under a sentence and then discharge him to a mental asylum. There was surely a great need for reform there

DENIAL OF ALLEGATIONS

The Marquess of DUFFERIN AND AVA said he had never heard a speech containing so many allegations based on one book by one person—and that an ex convict—without any attempt whatever to produce evidence from outside sources The assaults on the officers at Parkhurst in 1928 1020 and 1930 were confined to two three and nine cases respectively He said he would take the responsibility of telling Lord Kinnoull that the story of hearing the drop fall was pure nonsense and complete imagination. It was not possible to hear the drop fall at Wandsworth In 1910 the prison population of this country was just under 21 000 at the present moment it was only 10 000 Of all the persons recently received into prison for the first time for serious offences during the years 1030–33 80·7 per cent so far as was known had not returned to prison a second time up to the end of 1035 Therefore it did seem that reforms had been made even if Lord Kinnoull thought that they had not gone far enough in the direction of keeping people out of prison and preventing people who had been in prison from being forced back into criminal life Solitary confinement had been practically done away with Every prisoner now unless there was some medical reason worked from the very beginning in association with other prisoners But contamination might easily follow if all sorts of prisoners were allowed to mix freely together Therefore the object of their reforms had always been to classify prisoners as clearly and as definitely as was within their power The first and obvious classification had been the institution of Borstal which had at one stroke taken one-sixth of the prison population and put them into places where they could not be contaminated by older and more vicious criminals It was obviously very difficult to have a system of classification within the prison itself It had been the policy of the Commissioners to reserve certain establishments for certain classes of prisoners Furthermore the Commissioners had developed the very right policy of collecting as far as possible young prisoners between 10 and 21 who were serving very short sentences But however hard they tried they could not in these collecting centres give the same training as they gave in a Borstal institution. The Commissioners had frequently drawn attention to the fact that magistrates and others who had to administer the law should think again and again before they sent young people to prison particularly those who had not previously been guilty of offences In 1935 of the boys sentenced to imprisonment 38 per cent had not previously been convicted of an offence and it was the firm conviction of the Commissioners and of the Government that in many of those cases probation would have met the case far better and that in the remainder of the cases a longer term of Borstal imprisonment would have done the boy far more good The only consolation was that whereas in 1032 a total of 2653 boys were sentenced to imprisonment the number had fallen to 1608 in 1035 It was the firm policy of the Commissioners at the moment to reduce to a minimum the period during which prisoners were locked in their cells Since 1031 it had been possible very greatly to increase the staff of prison officers available to look after the prisoners The spirit of prison reform was very much alive at present The Commissioners were doing everything in their power to fit these people for the new life they would have to take up when they came out The Commissioners were fully aware of the importance of the selection of suitable warders The nagging which had been referred to no longer existed and the present type of warder was quite different from the type upon which Mr Macartney drew for his imaginary pictures But he would not like Lord Kinnoull to think that either the Government or the Commissioners were complacent They were fully aware that there was still much that could be done —The Earl of KINNOULL said that he was very pleased that some of the allegations of Mr Macartney had now been denied, because they had never been officially denied before He was very gratified to hear that reforms were taking place and that more reforms were in contemplation

NOTES ON CURRENT TOPICS

The Factories Bill in Committee

The Factories Bill was further considered by a standing committee of the House of Commons on March 2nd and 4th

CUBIC SPACE AND OVERCROWDING

On Clause 2 Mr ELLIS SMITH moved that the proviso in the Bill that for five years the figure should be 250 cubic feet and should afterwards continue at the lower figure where a workroom had effective mechanical ventilation should not apply when overtime was being worked He said that many of the factory inspectors had very large areas and it might be years before they got round to inspect all the premises in their area Employers should not be allowed to work people overtime in crowded conditions The standards they were aiming at setting up under the Bill should be national standards and young people should not be called upon to work overtime in conditions which did not conform with those standards.—Sir J SIMON said there was a practical difficulty in making one rule regarding overcrowding in a workroom during the period before overtime began and a different rule when overtime began He was not satisfied with the form of the proviso in the Bill and it should be modified (cheers) He did not like it in so far as it made possible an indefinite prolongation of the less satisfactory standard of cubic space They did not intend to allow the proviso to operate for ever —Sir J HASLAM agreed that they did not want slum factories to be perpetuated for ever at a time when they were abolishing slum houses They should be thoughtful and cautious but bold in regard to factory legislation —The amendment was withdrawn

Sir J SIMON moved an amendment to restrict the reference to five years in the proviso to factories which had been continuously in the same occupation since the date of the passing of the Bill into law —The amendment was agreed to

Sir J SIMON moved a further amendment to alter part of the proviso and provide among other things that where effective and suitable mechanical ventilation was not provided the proviso should not continue to apply although the five years period had not expired —The amendment was agreed to

REASONABLE TEMPERATURE

On Clause 9 (which provides that effective provision shall be made for maintaining a reasonable temperature in each workroom but there shall be no escape into the air of fumes likely to be injurious or offensive) Mr BUCHANAN moved an amendment to delete the word reasonable and insert a provision that the temperature should be within the limits of 00 –05 F He urged that the question of what was a reasonable temperature in a workroom should not be left to the employer —Sir J SIMON said that the amendment was not a practical proposal They could not have a cast iron rule to deal with the wide varieties of work carried on in different factories The Secretary of State was given power by a subclause to make regulations with regard to temperature in any particular class of work.—The amendment was withdrawn

Miss HORSBRUGH moved an amendment to provide that the word reasonable should be qualified by the provision having regard to the purposes for which the premises are used —Sir J SIMON said that in interpreting the word reasonable the question of the purposes for which premises were used was a factor to be taken into consideration but it was not the only one The amendment would tend to exclude the consideration of whether the temperature was reasonable for the workpeople —The amendment was withdrawn

Mr **GRAHAM WHITE** moved an amendment to provide that there should be no escape into the air of fumes likely to affect the purity of the air It was, he said, important that the air in a workshop should not be contaminated There might be gases which were dangerous but not offensive —Mr **LLOYD** said that the amendment was very similar to an existing provision in the law The fundamental question was not the purity of the air, but whether there was anything in the air which was injurious or offensive to an individual —The amendment was withdrawn

Mr **MANDER** moved an amendment to delete the words "is done sitting" in a subclause which provided that in workrooms in which a substantial proportion of the work was done sitting, and did not involve serious physical effort, a temperature of less than 60° F should not be deemed, after the first hour, to be a reasonable temperature He said that the phrase "is done sitting" might be a temptation to a few employers not to provide seats —Mr **LLOYD** said the amendment would make the scope of the subsection vague and difficult to enforce If a gross case of an attempt to avoid the provisions of the Bill came to the attention of the Home Office they would consider prescribing a standard of temperature in that particular class of work.—After further debate, Sir J **SIMON** said he would have the matter further considered, and the amendment was withdrawn

"ADEQUATE VENTILATION"

On Clause 4 (which provides that there shall be effective provisions for securing that a workroom is adequately ventilated and for rendering harmless, so far as practicable, fumes, dust, and other impurities that may be injurious generated in the course of work) Mr **BUCHANAN** moved the deletion of the words "so far as practicable"—Mr **LLOYD** said it would not be right to make an employer criminally liable when he had done all that was practicable in the circumstances —The amendment was withdrawn

Mr **SILVERMAN** moved an amendment to add a provision that no mechanical ventilation should be deemed efficient which did not secure such frequency of complete changes of air in a workroom as the Home Secretary might direct —Sir J **SIMON** said that the whole science of ventilation was developing rapidly The most important inquiries of a practical and scientific kind were going on He thought it was undesirable to put in a Statute, which might last for many years, what amounted to a limiting provision —Sir E **GRAHAM-LITTLE** said he did not think that attention had been sufficiently given to the importance of changes of the air in the room. It was not a practical proposition to insist on so many changes an hour There was a far better system that could be adopted, and he regretted that he had not been allowed to move his amendment to provide for testing the ventilation and coolness of the air He hoped that the Secretary of State would consider the adoption of approved methods used extensively in most progressive Government Departments, including the Home Office and the India Office, to test the efficiency of the ventilation and the temperature of the air It was a simple scientific instrument in the form of a thermometer, and its value had been tested —After further discussion the amendment was withdrawn

"SUITABLE LIGHTING"

On Clause 5 (which provides that effective provision shall be made for maintaining suitable lighting, natural or artificial, in every part of a factory in which persons are working or passing), Mr **CARTLAND** moved an amendment to provide that the Home Secretary might by special regulations direct that any operation in a factory should be carried on, where sufficient natural lighting was available, during the day time He said it was desirable to deal with those processes which it was undesirable to carry on by artificial lighting There were industrial processes, such as putting decorations on chocolates for example, which were done by hand and were of a very detailed character If people did work of that kind by artificial light it strained their eyesight to such an extent that they might be in danger of eventually going blind.—Mr **HAMILTON KERR**, who supported the amendment, said that the Institute of Industrial Psychology had carried out exhaustive researches into the question of lighting in factories and they had amply proved the bad effect that poor lighting had on the health and productive capacity of workers The object of this amendment was to ensure in factories that wherever possible natural lighting should be preferred even to the best artificial lighting —Sir J **SIMON** said that he did not think it was a practical matter to carry out this amendment If it was generally understood that there would be better work, more production, and more accurate work in many trades when the work was done in daylight than would be the case if the employer went to the expense of installing artificial lighting, then he thought they would encourage people to do the work in daylight But he would not envy the Home Secretary, whoever he might be, if he had to draw up regulations under this particular amendment The Committee would appreciate that they were taking a great step forward in Clause 5—the first real step forward in this Bill There was not in the factory law at present any provision requiring adequate lighting, except in certain dangerous trades They were doing a pretty big thing in Clause 5 and they ought not to complicate it unnecessarily —The amendment was withdrawn

Mr **RIDLEY** moved an amendment to delete the proviso that nothing in the clause, or in any regulations made under it, should be construed as enabling directions to be prescribed as to whether any artificial lighting is to be produced by electricity, gas, or any other particular means He said that he thought the Home Secretary should be in a position to prescribe the precise form of lighting which seemed to be desirable and imperative in order that a sufficient and suitable standard of lighting might be employed —Sir J **SIMON** said he did not wish to use the Factories Bill as an occasion for an argument about the efficiency of different kinds of lighting It was no part of the business of the Home Office to say how the lighting was to be produced What they were concerned with was sufficient and suitable light, and not with how the light was produced —Mr **BROAD** said that for most industrial processes where fine work and steadiness of hand were required gas lighting was obsolete If it was necessary for the safety of the worker to put in electric light the Secretary of State would not be able to prescribe it The Bill prescribed cubic capacity Electric light was the only light which would give the power without combustion taking place at the point of illumination, and if they were to have gas light they ought to double the amount of cubic air space, because gas would consume more air than the workers were breathing —Sir J **SIMON** suggested that they should leave out these two extremely provocative words—electricity and gas—and that the words should run "as to whether any artificial lighting is to be produced from any particular source of illumination"—Mr Ridley's amendment was withdrawn and the amendment suggested by the Home Secretary was agreed to

In the House of Commons on March 5th the Prohibition of Vivisection on Dogs (Scotland) Bill came on for second reading one minute before 4 o'clock, when the debate was automatically adjourned

In the House of Lords on March 3rd Viscount **GAGE** presented a Bill to amend the law with respect to the discharge of trade effluents into public sewers of local authorities

The Bill was read a first time

QUESTION TIME

WEDNESDAY MARCH 3RD

Humidity in Great Britain

Mr Markham asked the Under Secretary of State for Air when it was hoped to have published maps showing relative humidity in Great Britain and whether it was intended to accompany such maps with a new handbook of normals —Sir P Sassoon replied It is estimated that the necessary computations will be completed in about nine months' time and that the maps will be published within 12 months The average values will be published in a book which will contain maps showing the geographical distribution of relative humidity for each month and for the year as a whole

THURSDAY MARCH 4TH

Public Kitchens in Necessitous Areas

Mr Wilson asked the Minister of Labour whether in view of the popularity which had attended the establishment of milk bars he would consider the possibility of setting up in some of the more necessitous areas public kitchens where at a small cost the more nutritious kinds of food could be supplied either for consumption on the premises or otherwise —Mr Ernest Brown replied The service which the hon Member suggests should be established does not lie within my powers as Minister of Labour

Viscountess Astor With whom do the powers lie ?

No further answer was given.

Meals at Juvenile Instruction Centres

Mr George Hall asked the Minister of Labour whether the National Advisory Council for Juvenile Employment had made any recommendation with regard to the provision of meals at juvenile instruction centres and whether in view of the need for improving national physique the Minister proposed to take steps to provide meals for these juveniles.—Mr Ernest Brown replied : I received a few days ago an interim report on this matter from the National Advisory Council for England and Wales, and am expecting very shortly a report from the Council for Scotland The recommendations made will be considered at once and a decision taken as soon as possible

Mr Hall Will the report be published ?

Mr Brown : I hope to make it available as soon as I have considered it

Women and Young Persons in Textile Factories : the Two shift System and Overtime

Mr Riley asked the Home Secretary how many textile factories if any in the West Riding of Yorkshire were working a two-shift system and how many women and young persons were employed on a two-shift system in such factories —Sir John Simon replied The number of textile factories in the West Riding in which women and young persons over 16 are employed on a two-shift system is 10 and the number of women and young persons so employed is rather over a thousand

Mr Riley asked the Home Secretary in how many textile factories in the West Riding of Yorkshire women and young persons had been employed on overtime beyond 48 hours in any one week and the approximate number of overtime hours so worked per week for the year ending Dec 31st 1936 —Sir John Simon replied : I regret that the statistics for which the hon Member asks are not available but I am informed that a considerable amount of overtime beyond 48 hours was worked last year by women and young persons in the textile factories in the West Riding

Government and Air raid Precautions

Mr Jenkins asked the Home Secretary whether in view of the differing opinions and the public concern as to the effectiveness of the air raid precautions now in course of preparation he would undertake to submit all the information to an impartial group of competent persons for examination and report —Mr Geoffrey Lloyd replied : In devising measures of air-raid precautions the Government avails itself of the best advice available and my right hon friend sees no reason for an inquiry of the kind proposed by the hon Member

Mr Jenkins : Is the hon gentleman aware that a meeting was held in a committee room of this House at which a number of scientists from Cambridge University met a large number of Members of all political parties as a result of which grave suspicion has been created in their minds that the Government s provisions up to date are not adequate ; and will he take steps to see that the public are given proper assurances that the provisions are the best that can be obtained ?

Mr Lloyd : Perhaps the hon Member has not followed the answers which I have given recently pointing out that the experiments by these Cambridge scientists are open to very grave objection and are not considered to be of practical value

Miss Wilkinson If there is some dispute and if they question the Government s tests and the Government question their tests, why do the Government refuse to send the matter to some impartial expert body ?

Mr Lloyd : Those scientists can be said in general not to have had great experience in this particular technical work, while the Government are advised by many of the principal professors amounting to nearly 100 of various universities, as well as other experts including those of the chemical industries who have had the greatest experience in the country in this work.

Mr Jenkins : Is the hon. gentleman aware that at the meeting to which I have referred a letter was read from one of the most highly qualified and most experienced scientists in this country expressing the view that the provisions are totally inadequate and should be inquired into carefully ?

Mr Lloyd : I should be very glad to have that letter

Air raid Wardens

Mr Baxter asked the Home Secretary if he was now in a position to make any further statement regarding the organisation of air raid wardens —Mr Geoffrey Lloyd replied : Yes Sir A memorandum is being dispatched to-day to borough and district councils recommending them to organise in consultation with the police a service of air raid wardens to supplement the normal resources of the civil authorities for safeguarding the general public in the event of air attack. It is proposed that fixed posts should be established from which the wardens should operate Each post will be responsible for a particular area and it is recommended that the division of towns into suitable areas should be started at once In residential districts posts should be allotted approximately on the basis of one post to every five hundred inhabitants while in business areas the distribution of posts would be governed rather by distance—for instance a post every quarter of a mile might be found suitable The minimum number of wardens required would be two per post It is intended that the wardens should be in a position to advise their fellow citizens on the recommended precautions and should be available to give immediate assistance in dealing with air raid damage The wardens would probably also be used in connexion with the distribution of civilian respirators. These services would be performed in the neighbourhood of the warden s home or place of business Volunteers who undertake these responsibilities will be given the training required and will be supplied by the Government with such equipment as is considered necessary to enable them to carry out their duties effectively This organisation will constitute an essential supplement to the local authorities air raid precautions services and the Government are confident that a sufficient number of volunteers will be forthcoming for the effective performance of this very important part of the work of civil defence The memorandum is being placed on sale and copies are being placed in the library of the House

Compulsory Pasteurisation of Milk

Mr Robert Morrison asked the Minister of Health whether in view of the evidence contained in the annual report of the chief medical officer of his department for 1935 of serious outbreaks of scarlet fever solely due to the sale of raw milk, he intended to introduce legislation during the present session providing for the compulsory pasteurisation of all milk —Sir KINGSLEY WOOD replied I am not in a position to add anything to the reply given to the hon Member on Nov 12th last

Mr MORRISON Does the right hon gentleman realise the dangers of this situation, and does he contemplate legislation ?

Sir K WOOD I cannot contemplate legislation at the present time

Workers' Hours

Mr WILSON asked the Minister of Labour the numbers of insured persons whose ordinary hours of work per week were over 48, 44 to 48, 40 to 43, and under 40 —Mr ERNEST BROWN replied For certain groups of industries (textiles, clothing, treatment of non metalliferous mine and quarry products, and the brick pottery, glass, and chemical industries) statistics showing the proportions of workpeople, employed by firms who supplied information in response to an inquiry made by my department, whose normal weekly hours, in October, 1935, were less than 44, 44, 44¼ to 46¾, 47, 47¼ to 47¾, 48, and over 48 respectively, are published on page 48 of the *Ministry of Labour Gazette* for February, 1937 Corresponding statistics for other manufacturing industries, and for certain non manufacturing industries, are now in preparation and will be published in subsequent issues of the *Gazette* The particulars given relate to wage-earners, similar figures for insured salary earners are not available

MONDAY, MARCH 8TH

Typhoid Outbreak in Liverpool

Mr GROVES asked the Minister of Health whether any investigation had been made into the milk consumed by the sufferers in the recent outbreak of typhoid at Liverpool, and whether the majority obtained their milk from the same source or from different sources —Sir KINGSLEY WOOD replied This outbreak has been investigated by officers of the Liverpool City Council, and I am informed that some 60 per cent of the persons affected obtained their milk-supply from the same retailer But there is no reason to think that milk was the source of infection in these cases

Blind Persons and the Poor Law

Miss WARD asked the Minister of Health whether he could announce the introduction of the Bill to extend the principle of removal of the blind from the administration of the poor law, as foreshadowed in his speech at Worcester last September —Mr HUDSON, Parliamentary Secretary to the Ministry of Health, replied This Bill is in course of preparation, but my right hon friend is not yet in a position to announce the date of its introduction

M P 's and Facilities for Physical Exercise

Sir REGINALD CLARRY asked the Parliamentary Secretary to the Ministry of Health, as representing the First Commissioner of Works whether he would consider the possibility of setting aside a room and facilities in the House of Commons to enable Members during their hours of attendance to take requisite exercise in conformity with the general desire for a keep fit campaign —Mr R S HUDSON replied My noble friend has considered the matter in consultation with the authorities of this House He has much sympathy with the request of my hon friend, but regrets that the demand on the accommodation for the purposes of public business is so great that it is not possible to accede to it

Ministry of Labour versus a Manchester Hospital

Mr ECKERSLEY asked the Parliamentary Secretary to the Ministry of Health as representing the First Commissioner of Works, whether, before the plans for the new labour exchange in Manchester were approved full consideration would be given to the value to the city of the Robey street branch of the Manchester Royal Infirmary and to the necessity for ensuring that the new exchange would not interfere with its light or amenities

Mr CARY asked the Minister of Labour whether his attention had been called to the fact that the new labour exchange building which was being erected close to the south wall of the Manchester Royal Infirmary would rob of light and render useless the wards of this institution, and whether, in view of this fact and the fact that a large sum of money had recently been spent on the infirmary he would give instructions that some other empty space or unused building in the district should be used for this purpose —Lieut Colonel MUIRHEAD replied I am aware of the position regarding the erection of the new central employment exchange for Manchester, and my right hon friend and the First Commissioner for Works have discussed the matter with the chairman and other members of the board of the Royal Infirmary After very careful consideration my right hon friend has decided that the building of the exchange should proceed, and the contractors are now working on the site

Demonstration of Anti Gas Respirator at Westminster

Mr ASSHETON asked the Home Secretary if he would make arrangements for the exhibition to Members in some convenient place of a respirator of the type designed to protect the civilian population —Mr GEOFFREY LLOYD, Under Secretary, Home Office, replied Yes, Sir I am arranging for a number of these respirators to be available for inspection by hon Members in the room off the Members' cloak room, during the hours while the House is sitting, on Monday, March 15th, and following days An officer will be in attendance to assist hon Members who may wish to try on the respirators and to answer any questions

TUESDAY, MARCH 9TH

Pensions for Blind Persons

Mr WESTWOOD asked the Secretary of State for Scotland if a Bill was to be introduced to reduce from 50 to 40 years the age at which pensions might be paid to blind persons —Mr ELLIOT The answer is in the affirmative

Mental Hygiene Out-patient Clinics in Scotland

Mr LEONARD asked the Secretary of State for Scotland the number of out patient clinics functioning under the Board of Control for the use of persons conscious of incipient mental trouble, and whether they were open continuously or at separate advertised periods —Mr ELLIOT replied There are nine mental hygiene out patient clinics in Scotland—four in Glasgow, three in Edinburgh, one in Paisley and one in Perth Seven are attached to general hospitals and all are under the direction of psychiatrists from mental hospitals They are open at advertised times

MEDICAL MEMBERS OF THE L C C

ALL ten medical members of the London County Council offered themselves for re election on March 4th when, outside the City of London, every seat was contested Two of the candidates were unsuccessful Dr Henry Robinson who was defeated in Kensington (North) and Dr S McClements in Woolwich (West) Dr Doris Odlum contested Hammersmith (North) without success The eight medical men and women who will serve on the Council for the next three years are

Name	*Representing*	
Dr C W Brook	Southwark (North)	Lab.
Dr S Monckton Copeman	Hampstead	M R
Dr J A Gillison	Bermondsey (Rotherhithe)	Lab
Mr Somerville Hastings	Stepney (Mile End)	Lab
Dr Bernard Homa	Hackney (Central)	Lab
Dr S W Jeger	Shoreditch	Lab
Dr F Barrie Lambert	Westminster (St George's)	M P
Miss F Rickards	Greenwich	Lab

Lab = Labour M R = Municipal Reform

The new Council held its first meeting on Wednesday when Lord Snell was re elected chairman.

MEDICAL NEWS

University of Cambridge

Dr E D Adrian F R S Foulerton professor of the Royal Society and fellow of Trinity College has been appointed to the chair of physiology in succession to Sir Joseph Barcroft who is retiring on Oct 1st

Dr Adrian who is 47 was educated at Westminster School Trinity College Cambridge and St Bartholomew's Hospital medical college He qualified in 1915 and obtained his M.D in 1919 After a period as resident medical officer at the National Hospital Queen-square he returned to Cambridge as university lecturer in physiology He was awarded the Rolleston memorial prize in 1916 and the Gedge prize in 1917 He was elected a fellow of the Royal Society in 1923 and the following year a fellow of the Royal College of Physicians of London He gave the Oliver-Sharpey lectures at the College in 1925 speaking on the interpretation of the electromyogram, and was awarded the Baly medal in 1929 In 193 jointly with Sir Charles Sherrington he received the Nobel prize in medicine and physiology and in the same year he was appointed to the Medical Research Council In 1934 he was awarded the Royal medal of the Royal Society Dr Adrian holds the honorary degrees of D.Sc. of Philadelphia and LL D of McGill. His publications include "The Basis of Sensation published in 1928 and The Mechanism of Nervous Action published in 193 His interest in clinical neurology first aroused during the late war has brought his neurophysiological studies into touch with medicine at many points

University of London

The following have been recognised as teachers in the university and assigned to the faculty of medicine

Dr B W Town (chemistry St Bartholomew's Hospital) Mr W M Collee (chemistry Guy's Hospital) Mr Constantine Lambrinudi (orthopædics Guy's Hospital), Dr Thomas Anwyl Davies (venereal diseases, St Thomas's Hospital) Mr N R Barrett (surgery St. Thomas's Hospital) Dr R K Bowes (obstetrics and gynæcology St. Thomas's Hospital) Mr W. R Bristow (orthopædics St. Thomas's Hospital), Dr G B Dowling (dermatology, St Thomas's Hospital) Mr P G Doyne (ophthalmology, St Thomas's Hospital), Dr J St C. Elkington (medicine St. Thomas's Hospital) Dr Geoffrey Fildes (radiology St. Thomas's Hospital) Dr Harold Gardiner-Hill (medicine, St. Thomas's Hospital), Dr Reginald Hilton (medicine St. Thomas's Hospital) Mr W A Mill (oto rhino laryngology St. Thomas's Hospital) Mr D F A. Neilson (oto rhino laryngology St. Thomas's Hospital) Dr G G Penman (ophthalmology St. Thomas's Hospital) Mr George Perkins (orthopædics St Thomas's Hospital) Dr J F Smith (medicine St Thomas's Hospital), Mr B W Williams (surgery, St. Thomas's Hospital) Dr H D Wilson (anæsthetics, St Thomas's Hospital) Dr A J Wrigley (obstetrics and gynæcology St Thomas's Hospital) Dr J. M. Wyatt (obstetrics and gynæcology St Thomas's Hospital) Miss C. L. T Lucas (biology, London (R F.H) School of Medicine for Women) and Mr Harold Davis (pharmacy University College Hospital)

Mr C Jennings Marshall and Mr C E Shattock have been appointed internal and external examiners in surgery in place of Mr G T Mullally and Mr Davies-Colley who have resigned Mr C W G Bryan has also been appointed a fifth examiner in surgery to be called on if required and Prof Lambert Rogers an associate examiner

The university medals in pathology psychological medicine and surgery have been awarded at the M.D and M.S examinations in December to Dr A H T Robb-Smith (St Bart's) Dr A C Dalzell (King's Coll) and Mr J B Gilchrist (Middlesex) respectively

A Carpenter medal together with a money prize will be awarded shortly for work of exceptional distinction in statistical genetic comparative or experimental psychology including the functions of the central nervous system and special senses for which a doctor's degree (other than the Ph.D) has been awarded during the last three years Application should be sent to the academic registrar not later than June 10th

A public lecture on blood groups and genetics will be given by Dr V Friedenreich of Universitetets Retsmedicinske Institut Copenhagen on Wednesday March 1 th at 5 30 P M Dr R A Fisher F R S will be in the chair The lecture will be held at the Galton laboratory University College W C and is open to the public without fee

Besredka Prize

The laboratoires La Biothérapie have founded a Besredka prize of Frs 15 000 to be offered annually for an essay in French on local immunity in its therapeutic applications The first award will be made in June 1938 and entries should be sent to the laboratories 3 rue Paul Barruel Paris XV before Dec 31st

Department of Health for Scotland

Dr J M. Mackintosh medical officer of health and school medical officer for the county of Northampton has been appointed chief medical officer of the Department of Health in succession to Dr J L Brownlie who has resigned

Dr Mackintosh who is 46 years of age was educated at Glasgow High School and Glasgow University He graduated M.A. in 1911 and M B in 1916 He served in the late war as a sergeant in the Royal Army Medical Corps as a combatant officer in the Cameron Highlanders and later in charge of a special hospital division After demobilisation he acted for a year as a medical officer to the Ministry of Pensions and in 1920 entered the local government service and was appointed assistant medical officer for Dorset. In 1923 he went to Burton-on Trent in the same capacity and was there responsible for establishing an orthopædic scheme and a combined health centre and laboratory After three years as medical officer of health for Leicestershire he took up his present position in 1930 Dr Mackintosh is a barrister-at law of Gray's Inn and is the author of reports on rural housing and water-supply He is chairman of the propaganda committee of the British Social Hygiene Council.

Physical Training in Scotland

Sir Ian Colquhoun has been appointed chairman of the national advisory council appointed to consider the best methods of meeting the needs for physical recreation in Scotland The members include the following Dr W L Burgess Prof E P Cathcart, F.R.S Lord Clydesdale M.P Mr W A Cochrane Dr G C Cossar and Colonel P S Lelean F.R.C.S Captain E D Stevenson has been appointed secretary of the council and may be addressed at 4 Great Stuart-street Edinburgh

Margaret street Hospital for Diseases of the Chest London

On Monday March 15th a clinic for the prevention and treatment of hay fever which will remain open from 10 A.M to 1 P M daily (except Saturdays and Sundays) until the end of the summer will be inaugurated at this hospital The treatment will include intranasal ionisation and further information may be had from the secretary of the hospital

Medical Society of London

At a dinner at Claridge's on March 4th celebrating the 162nd anniversary of this society the first speaker was Lord Wright the Master of the Rolls He praised medicine at the expense of law but quoted from Johnston Abraham's biography of Lettsom the remark about a doctor who always hesitated in drawing conclusions from uncertain premises and appeared to little advantage in the sick room Sir William Willcox said that the society still displayed the characteristics aimed at by Lettsom at its foundation; but its discussions steadily became more learned and critical One could learn more he thought by attending a meeting of an hour and a half than by weeks of studying books and medical journals for one got a proper perspective and truth without embellishment The financial position of the society was now better perhaps than it had ever been and nothing was lacking save an endowment fund The number of fellows exceeded 600 and the average attendance had doubled in twelve years being now 50 In conclusion Sir William announced that Dr Arnold Chaplin had just presented to the society his collection of nearly 400 engravings of medical men which he hoped might form the nucleus of an even larger collection Mr J E H Roberts dealt with The Guests comprehensively yet concisely and responses came from Lord Burghley M.P Sir Arthur MacNalty and Sir Edward Tindal Atkinson Lord Burghley after expressing his respect for doctors and income tax collectors turned to the physical state of the nation and deplored the fact that other countries—and not only the dictatorship countries—have stolen a march on us in cultivating physical fitness In all other respects British social services led the world, and what was chiefly essential at this moment was to stir the imagination of young people Sir Arthur MacNalty reviewed the relations between the Medical Society of London and preventive medicine recalling that Lettsom was interested in many of the subjects that engross public health authorities to-day The closer clinical and preventive medicine could be brought together he said the more they would achieve

Dr H J Shirley, consulting anæsthetist to University College Hospital, has been appointed a deputy lieutenant for the County of London, and Mr Charles Leonard Isaac, senior surgeon to the Swansea General Hospital, a deputy lieutenant for Glamorgan

Royal Medical Benevolent Fund

The 101st annual general meeting will be held in the library of the Medical Society of London (11, Chandos street, Cavendish square, W) on Tuesday, March 16th, at 5 P M Sir Thomas Barlow, the president, will be in the chair, and the business will comprise the reception of the annual report and statement of accounts and the election of officials and committee of management for the ensuing year

Laryngo-phoniatry

Ten lectures on this subject will be given from May 31st to June 5th at the Hôpital Bellan, 7, rue du Texel, Paris XIV Further information may be had from Dr Jean Tarneaud, 27, avenue de la Grande Armée, Paris XVI

Eradication of Bed-bugs

In view of the attention which is being devoted by local authorities to the eradication of the bed bug from houses the Royal Sanitary Institute has arranged two courses of training in the work of disinfestation They will begin on Tuesday, May 18th, and on Monday, June 7th Full particulars may be had from the secretary of the institute, 90, Buckingham Palace road, London, S W 1

Society for the Provision of Birth Control Clinics

A lecture on the theory and practice of contraception will be given to medical practitioners and medical students by Dr Greta Graff on Friday, April 2nd, at 6 P M , at the Walworth Women's Welfare Centre, 153A, East-street, S E Practical demonstrations will be given on Friday, April 9th, at 6 P M and at 7 P M The lecture and demonstrations will be open to medical practitioners and to all students who have completed their gynæcological course Tickets may be had in advance from the secretary of the society, 153A, East street, S E 17

Royal Veterinary College, London

A new governing body of this college has been set up in accordance with the royal charter granted last year The Duke of Gloucester is the president of the court of governors, and there are six vice presidents including Sir John McFadyean Among the bodies nominating members of the court and of the executive council are the County Councils Association, the Medical Research Council, the Corporation of London, the Privy Council, the Ministry of Health the Colonial Office, the University of London, and the Royal Society Under the charter the name is changed to the Royal Veterinary College and Hospital

West London Hospital

Queen Mary has consented to visit this hospital on Oct 18th to open the new extension

Nurses' Home at Walton Hospital

The Lady Mayoress of Liverpool on Feb 25th opened the new extension to the nurses' home at this hospital It has cost £43,290 and provides accommodation for 166 nurses

Dewsbury Infirmary

A Coronation appeal for £50,000 is being issued on behalf of this hospital It is to be on a seven years' plan, any promise made by a donor being divided into 14 half yearly payments The money raised is to be utilised to pay off the debt on the new infirmary and to provide for the extension of the nurses' home and other necessary enlargements

Kidderminster Hospital

Carpet and other firms have offered to pay the accumulated debt of this hospital, which amounts to £9168, provided that schemes of extensions are abandoned until income and expenditure balance, and 'that no member of the medical profession or the hospital staff (medical or otherwise) be allowed to act in any executive capacity at the hospital, or to serve as an ordinary member of any committee, the function of the staff to be purely advisory without any power to vote on questions of finance or policy "

Glasgow Royal Maternity Hospital

Mr Archibald Walker has given £25,000 to this hospital

Kettering General Hospital

Mr Alan Timpson has announced that he intends to double his gift of £5000 to this hospital

Royal National Hospital for Rheumatic Diseases, Bath

The Duchess of Kent has agreed to become president of this hospital

New Convalescent Home at Mitcham

On March 1st Sir Kingsley Wood laid the foundation stone of a new convalescent home at Mitcham It is the gift of Mr I H Wilson, the donor of Wilson Hospital, and there will be fifty beds

Appointments

BEYNON, JOHN M B Lond has been appointed Hon Medical Registrar to the Royal Sussex County Hospital Brighton

BRADBEER, W H M S Lond , D L O Hon Aurist and Laryngologist to Torbay Hospital, Torquay

DAVISON M H A , M D Durh , ' Morning List ' Anæsthetist for the Royal Victoria Infirmary, Newcastle-upon Tyne

GIFFORD E H W , M B N Z Resident Medical Officer at the Royal Cancer Hospital (Free) London

HUGHES JOHN B Chir Camb , F R C S Eng Clinical Assistant to the Surgical Department of the Sheffield Royal Infirmary

LOVIBOND, J L M B Camb M R C P Lond Junior Medical Registrar at the Middlesex Hospital

MACRAY J S B M B Aberd D P H Deputy Medical Officer of Health for Bury

MILLER, F J W M B Durh D C H Medical Registrar at the Royal Victoria Infirmary Newcastle upon Tyne

MORRIS, W I C M B F R C.S Edin M C O G , Full time Obstetric Consultant for the County of Ayr

NORTHFIELD D W C , M.S Lond F R C.S Eng , Assistant Surgeon to the Neurosurgical Department of the London Hospital

PAGE B H M B Camb , F R C.S Eng Surgical First Assistant and Registrar at the London Hospital

ROBERTS G J , M D Edin D P H , Deputy Medical Officer of Health and Deputy School Medical Officer for Bootle

SEED G S M B Leeds F R C.S Eng , D L O , Hon Aural Surgeon to the Leeds General Infirmary

WILKIE, J L M B F R C S Edin Assistant County Medical Officer for Northumberland

St John Clinic, London —The following appointments are announced —

TANNER, W E M.S Lond., F R C S Eng Consulting Surgeon ,

NOBLE, T P M D Edin , F R C.S Eng , F R.S Edin., Clinical Assistant to Orthopædic Surgeon , and

TIPPETT, G O M B Lond F R C.S Eng Clinical Assistant to Orthopædic Surgeon

Queen Charlotte's Maternity Hospital London —The following appointments are announced —

BEATON, DONALD M B Edin , Senior Resident Medical Officer

MEEK, EDWARD M D Toronto L M Dubl Assistant Resident Medical Officer ,

GRACE LUCY W M B Lond , Resident Anæsthetist and District Resident Medical Officer

GIBB, ANN F M B Edin Resident Anæsthetist and

WOODHEAD, ALICE L M D Manitoba Resident Medical Officer at the Isolation Block, Hammersmith

Births, Marriages, and Deaths

BIRTHS

ANDERSON —On March 2nd, to Dr and Mrs Anderson Grove Hospital, Tooting Graveney S W 17—a son

GILLETT —On March 3rd at Eastbourne the wife of Dr F H Gillett, of a son

GRIFFITHS —On March 8th 1937 at Gwynant Buxton to Nancy (*née Wrigley*), wife of Dr G J Griffiths—a daughter (Elizabeth Ann Bryceson)

JARMAN —On March 3rd at New Cavendish-street W., the wife of Dr Ronald Jarman, of a son

POWELL EVANS —On March 3rd the wife of Dr John Powell Evans Kingston road, Wimbledon of a daughter

TAYLOR —On Feb 26th the wife of Dr Antony Taylor Banwell, Som of a daughter

DEATHS

ATTLEE.—On March 8th at Wellingborough John Attlee M D Camb late of Grosvenor street, W aged 67

HAM —On March 7th Charles Edward Ham M D Lond late of Clapham and Devonshire place W

MOSSOP —On March 4th, Arthur George Mossop M R C S Eng J P formerly M O H Pretoria of Bournemouth in his seventy fifth year

RIDDELL.—On March 6th at Torquay Robert George Riddell, M D F R C.S Edin

N.B —A fee of 7s 6d is charged for the insertion of Notices of Births Marriages and Deaths

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1 Wimpole-street W

TUESDAY, March 16th

General Meeting of Fellows 5.30 P.M. Ballot for election to the fellowship

Pathology 8.30 P.M. Annual general meeting Joan Taylor Investigation of Two Cases of Agranulocytosis. G A. H. Buttle H J Parish, H Proom and Dora Stephenson p Aminobenzenesulphonamide and its Derivatives (*a*) Treatment of Experimental Infections of Mice; (*b*) Bactericidal Effects Induced in Blood. C. H Andrewes Wilson Smith and C. H Stuart Harris Recovery of Virus from Cases of Influenza in the 1937 Epidemic O H Gray: Ketosis in Infants. Joan M Ross and Joan C Drury 1 Sections from a Case of Sickle-cell Anæmia 2 A New Method of Staining Red Blood Corpuscles in Tissues Dorothy S Russell and D. W C Northfield 3 Calcified Papilloma of Choroid Plexus

THURSDAY

Dermatology 5 P.M. (Cases at 4 P.M.) Dr H W. Barber: 1 Changes in the Pilosebaceous Follicles and Sebaceous Secretion following Herpes Zoster Dr R Klaber: 2 Necrobiosis Lipoidica Diabeticorum (Arrested Case) 3 Sebo-cystomatosis (Gunther) 4 Lichen Sclerosus (Hallopeau). Dr L. Forman 5 Pustular Bactericide Dr Elizabeth Hunt 6–7 Recurrent Buccal Ulceration

Neurology 8.30 P.M. Dr J K Hasler, Prof A D Macdonald Dr Macdonald Critchley, Dr F R Ferguson, and Dr W Russell Brain: The Neurological Sequelæ of Spinal Anæsthesia

FRIDAY

Physical Medicine Obstetrics and Gynæcology 5 P.M. Dr. M Keyes Dr Leonard Boyes Prof. D Dougal and Mr J D Harris Physical Treatment of Pelvic Disorders (excluding Electrotherapy)

Odontology Visit of the Odontological Section of the Birmingham Medical Institute 7 P.M., Dinner at Langham Hotel W 8.30 P.M. Prof H E Humphreys Three Cases of Osteomyelitis of the Jaw Dr E. W Fish The Significance of Oral Infection its Accessibility and Treatment Dr J Wallace Graham: The Toxicity of Sterile Filtrate from Parodontal Pockets.

SATURDAY

Odontology (cont.) 10.15 A.M. Cases will be shown by Mr John Bunyan Mr J Edgley Curnock, Mr Herbert Gordon, Mr G T Hankey Mr C Bowdler Henry Mr W. E. Herbert Dr Werner Lowinsky, and others.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

THURSDAY March 18th.—8.15 P.M. Laboratory Meeting at the Royal Army Medical College, Grosvenor-rd S W

SOCIETY OF MEDICAL OFFICERS OF HEALTH 1 Thornhaugh-street, W C.

FRIDAY March 19th.—5 P.M. Dr Henry Herd Physical Education

MEDICO LEGAL SOCIETY

THURSDAY March 18th.—8.30 P.M. (Manson House Portland place W.) Dame Louise McIlroy: Phobias and Obsessions.

HUNTERIAN SOCIETY

MONDAY, March 15th.—8.30 P.M. (Simpson's Restaurant Bird in Hand Court, 76, Cheapside) Dr A G Maitland Jones and Dr L. Mandel: Gastro-enteritis in Children.

BRITISH INSTITUTE OF RADIOLOGY 32, Welbeck-st W

THURSDAY March 18th.—8 P.M. Prof. S Russ and Miss G M Scott: Some Biological Effects of Continuous Gamma Irradiation with Note on Protection

Medical Section

FRIDAY.—11 A.M. Visit to the X Ray Department of the London Hospital 5 P.M. Case Demonstration and Discussion

EUGENICS SOCIETY

TUESDAY March 16th.—5.15 P.M. (Linnean Society Burlington House Piccadilly W.), Miss H Holland Mr J R Baker Ph.D Dr S Zuckerman Birth Control—the Last Year's Work.

NORTH LONDON MEDICAL AND CHIRURGICAL SOCIETY Royal Northern Hospital Holloway road N

WEDNESDAY, March 17th.—9.15 P.M., Judge Earengey K.C.: The Doctor in the Witness-box.

LECTURES ADDRESSES DEMONSTRATIONS &c.

ROYAL COLLEGE OF PHYSICIANS Pall Mall East, S.W

TUESDAY March 16th and THURSDAY.—5 P.M. Dr H Gardiner-Hill Growth and Development their Pathological Aspects (Oliver-Sharpey lectures.)

ROYAL COLLEGE OF SURGEONS OF ENGLAND Lincoln's Inn fields W C.

MONDAY March 15th.—5 P.M. Dr C Keith Simpson: The Pathology of the Adrenal Gland in Relation to Sudden Death.

FRIDAY.—5 P.M. Dr A J E. Cave: Anatomy of the Trigeminal Nerve

UNIVERSITY OF LONDON

WEDNESDAY March 17th.—5.30 P.M. (Galton Laboratory Gower-street W.C.) Dr V Friedenreich: Blood Groups and Genetics

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane road W

WEDNESDAY March 17th.—Noon clinical and pathological conference (medical) 2 P.M. Dr Janet Vaughan The Blood Picture in Bone Diseases 3.15 P.M. clinical and pathological conference (surgical) 4.30 P.M., Miss Honor Fell D.Sc. Tissue Culture

THURSDAY.—Noon clinical and pathological conference (obstetrics and gynæcology) 2.30 P.M. Dr Duncan White: Radiological Demonstration 3.30 P.M., Mr A K. Henry Demonstrations on the Cadaver of Surgical Exposures. 3.30 P.M. Dr P M F Bishop Hormone Therapy in Gynæcology

FRIDAY.—2 P.M. operative obstetrics 2.30 P.M. Prof Hey Groves: Fractures 3 P.M. department of gynæcology, pathological demonstration

Daily 10 A.M. to 4 P.M. medical clinics, surgical clinics and operations obstetrical and gynæcological clinics and operations.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE Hammersmith W

MONDAY, March 15th.—10 A.M. Dr Post Demonstration of X Ray Films. Skin clinic 11 A.M. surgical wards 2 P.M. operations surgical and gynæcological wards medical, surgical and gynæcological clinics

TUESDAY.—10 A.M. medical wards 11 A.M. surgical wards 2 P.M. operations medical, surgical and throat clinics 4.15 P.M. Dr Konstam Hypertension

WEDNESDAY.—10 A.M. children's ward and clinic 11 A.M. medical wards. 2 P.M. gynæcological operations medical surgical and eye clinics. 4.15 P.M. Dr Redvers Ironside Neoplasms of the Posterior Intracranial Fossa.

THURSDAY.—10 A.M. neurological and gynæcological clinics Noon fracture clinic. 2 P.M., operations medical surgical and genito urinary and eye clinics.

FRIDAY.—10 A.M. medical wards skin clinic. Noon lecture on treatment. 2 P.M., operations medical surgical and throat clinics. 4.15 P.M. Mr Vlasto Mastoid Infection.

SATURDAY.—10 A.M. children's and surgical clinic 11 A.M. medical wards

The lectures at 4.15 P.M. are open to all medical practitioners without fee

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION 1 Wimpole-street, W

MONDAY March 15th to SATURDAY March 20th.—ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234 Great Portland-street, W all-day course in orthopædics.—WEST END HOSPITAL FOR NERVOUS DISEASES Welbeck street W afternoon M.R.C.P course in neurology.—ROYAL CHEST HOSPITAL, City road E.C Mon., Wed and Fri. 8 P.M. M.R.C.P course in chest diseases (open to non-members).—BROMPTON HOSPITAL, S.W twice weekly at 5 P.M., M.R.C.P. course in chest diseases.—ALL SAINTS' HOSPITAL, Austral-street S.E. Sat and Sun course in urology.—Unless otherwise stated courses arranged by the fellowship are open only to members

HOSPITAL FOR SICK CHILDREN Great Ormond-st., W C.

THURSDAY March 18th.—2 P.M. Mr *Eric Lloyd* Technique in Operations on the Knee Joint 3 P.M. Dr Alan Moncrieff: Some Special Diets

Out patient clinics daily at 10 A.M. and ward visits at 2 P.M.

NATIONAL HOSPITAL Queen-square W C

MONDAY March 15th.—3.30 P.M. Dr Kinnier Wilson Congenital and Heredo-familial Diseases (IV.)

TUESDAY.—3.30 P.M. Dr Grainger Stewart Epilepsy

WEDNESDAY.—3.30 P.M. Dr Kinnier Wilson Clinical Demonstration

THURSDAY.—3.30 P.M. Mr Cawthorne: Intracranial Complications of Disease of the Cranial Air Sinuses.

FRIDAY.—3.30 P.M. Dr Purdon Martin: Toxic Diseases of the Brain and Spinal Cord

Out patient clinic daily at 2 P.M.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART Westmoreland-street W

TUESDAY March 16th.—5.30 P.M. Dr D Evan Bedford: Left Ventricular Failure

CENTRAL LONDON THROAT NOSE AND EAR HOSPITAL Gray's Inn road W C.

FRIDAY March 19th.—4 P.M. Mr W G Scott Brown *Deaf Mutism*

HAMPSTEAD GENERAL AND NORTH WEST LONDON HOSPITAL N W

WEDNESDAY March 17th.—4 P.M. Mr D H. Patey: The Present Position of Surgery of the Thyroid Gland

ST. JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE, Ranelagh road S.W

FRIDAY March 19th.—4.30 P.M. Mr A G Timbrell Fisher Orthopædic and Surgical Treatment in Rheumatic Diseases.

SOUTH WEST LONDON POST-GRADUATE ASSOCIATION

WEDNESDAY March 17th.—4 P.M. (St James Hospital Ouseley road S W.) Dr H Haldin Davis: Common Skin Ailments

MANCHESTER ROYAL INFIRMARY

TUESDAY March 16th.—4.15 P.M. Dr J Wharton Demonstration of Ophthalmic Cases.

FRIDAY.—4.15 P.M. Mr A. Graham Bryce: Demonstration of Surgical Cases

ANCOATS HOSPITAL Manchester

THURSDAY March 18th.—4.15 P.M. Dr Arnold Renshaw Twenty-five Years' Work as a Pathologist

LEEDS GENERAL INFIRMARY

TUESDAY March 16th.—3.30 P.M. Mr John Foster: The Diagnostic and Prognostic Significance of Retinal Changes in Renal and Vascular Disease

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION

WEDNESDAY March 17th.—4.15 P.M. (Western Infirmary) Prof. A J Ballantyne The Treatment of Cataract and the Cataract Patient

NOTES, COMMENTS, AND ABSTRACTS

INFLUENCE OF SCHOOL ROUTINE ON THE GROWTH AND HEALTH OF CHILDREN

BY JOHN ALLAN

THE possibility that school routine may be a factor of importance in the development of children seems to have been strangely neglected. In the past studies of growth have taken little account of periodic changes in the environment of the child and have been concerned mainly with standards of height and weight rather than with growth. Investigations carried out during the last fourteen years show that significant changes of growth rate occur during each school term. It is difficult to resist the conclusion that the school environment is directly responsible for these changes.

MATERIAL

The bulk of the material on which this study is based was collected in a boarding school in the south of England between 1923 and 1932. Unfortunately the numbers of boys in the school were small, ranging from 60 to a little over 90, so that averages for any one term were derived from somewhat limited figures. The total figures for the whole eight-year period reach quite large numbers and the consistency of behaviour in each term was very striking. This in conjunction with evidence from a number of other schools, makes one confident of the validity of the results presented here. As to conditions in the school it should be stated that diet was ample and satisfactory in quality and content, hours of work, exercise, and rest were carefully adjusted to the estimated needs of growing children, and there was opportunity for an unusually wide range of activities and interests out of school hours. The ages of the children ranged from 11 to 19 years.

METHOD

Each boy was weighed, measured, and examined at the beginning and end of term, and measurements of height and weight only were taken at intervals of four weeks. All measurements were taken without clothing and at the same time of day on each occasion, a steelyard type of weighing machine was used. In this way a series of measurements was obtained giving precise information about growth changes in each third of the term.

WEIGHT AND HEIGHT CHANGES

For the final analysis each increment was expressed as a percentage of the previous measurement before averaging. It was at once obvious that more weight was gained in the first month of term than in the second, and more in the second than in the third. Although many would lose some weight during the final month, a few even losing more than they had gained in the previous two months in general 70–80 would show a gain in weight for the term as a whole. When the increments for each month of the whole period were totalled, averaged and plotted, as in Fig. 1, a picture was obtained which showed the trend of fluctuations observable in each year, and among children in all age groups.

It is noticeable that at this school the rate of increase in weight during the holidays is much below that for the early portions of the spring and autumn terms. As the rate of energy expenditure during the term must have been very much higher than that for the holidays, it is probable that the gain during the term represents a gain of bone and muscle. A number of considerations lead to the tentative conclusion that at this school the retardation during the final months might be due to the monotony inseparable from institutional life rather than to actual pressure of work and play. Comparison made with sample figures from other schools make it probable, nevertheless, that in many schools pressure of work plays an important part in its causation.

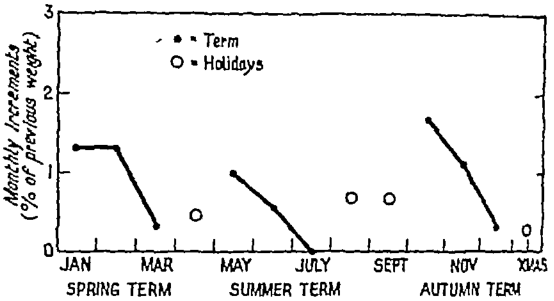

FIG. 1.—The average monthly increments in weight in a school of boys aged 11–19 years. The numbers measured varied from 478 in August and September to 650 in December.

Figures for height increments show a similar trend during the terms but over a much smaller range. In this case a slightly higher rate of increase is found during the holidays than in any month of any term, the spring holidays showing the highest increase of all. In general the extra growth recorded for the holiday periods may be largely attributable to a reduction of the mechanical pressures imposed on the compressible intervertebral discs by such activities as gymnastics, games and athletics.

In both height and weight there are periods of reduced growth rate occurring towards the end of each term of the school year. The regularity of the form of the fluctuations would lead one to suppose that seasonal and climatic factors have no great influence where schools in the south of England are concerned.

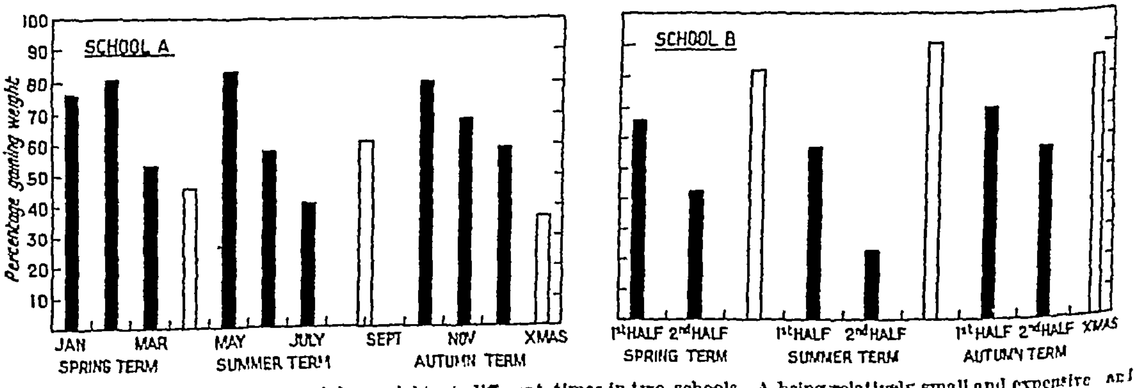

FIG. 2.—The proportion of pupils gaining weight at different times in two schools, A being relatively small and expensive and B large and less well to do.

COMPARISON OF SCHOOLS

An interesting comparison of the records of two schools is presented in Fig 2 * This shows the proportion of boys at each of two schools who gained weight in term and holiday time during 1926 School A was relatively small while school B was very large and had a rigorous and rather formal routine with greater pressure of work and play and less time allotted to rest and sleep Diets at both schools were satisfactory and the range of ages was virtually identical. Both schools were situated in pleasant country in the South of England During the slightly longer intervals between weighings at B rather fewer children gained weight but the trend downwards at the end of term was similar for both During the holidays the contrast is great a very high proportion of boys from B gaining weight on each occasion making it appear that some compensatory acceleration was taking place It is *significant to note that the children attending B* come, in the main from less well to-do homes than those attending A where the fees are very much higher

This peculiar difference in holiday behaviour noticeable in other years as well may form the basis for a rough assessment of the relative severity of routine in different schools of a similar type A comparison of the percentages of children who gain weight during the term and holiday times will give *an indication of the position* The *higher the percentage* who gain during the holidays the more strenuous and exacting the régime The converse must not be considered to have any significance if the children come from poor homes

INCIDENCE OF ILLNESS

Studies of the incidence of illness at school A show a pronounced tendency for the bulk of sickness and disability to occur in one or other of two well defined periods of the term One of these periods when a high incidence of illness may be expected is at about the third week of term while the other occurs about the eighth or ninth week It seems to be rare for an epidemic to occur or reach its peak during the middle four weeks of term.

SUBNORMAL NUTRITION

Material obtained from these figures relating to children from prosperous homes provides a good basis for comparison of standards of nutrition and growth It is remarkable to find that in an area of south-east London there are comparatively few children who show any serious signs of defective nutrition. In the main they appeared to be sturdy robust and active but on comparing their height for age with the standard achieved by children in prosperous boarding schools it was *found that many* were a full two years behind Hereditary factors may have played some part but it would be surprising if they were sufficient to account for the 70 per cent who were an inch or more below the average for their age on the standard of the well nourished. Moreover the children concerned were not drawn from a slum area and the parents of the majority were in employment It seems probable therefore *that stunted height resulting from defective* nutrition will tend to mask the real state of affairs throughout the country The danger that much malnutrition will be passed over is particularly great in view of the recent change of policy of the Board of Education Medical Authorities which is outlined in the latest annual report of the chief medical officer (The Health of the School Child Report for 1935 H.M.S.O 2s 0d) From this it appears that estimates of nutritional states are now being based on clinical observations only standards of height and weight for age being no longer applied In this way only the grossly undernourished will be recorded and the general nutrition of the child population will be made to appear much better than is actually the case

CONCLUSIONS

It should not be assumed that the present organisation of school routine is satisfactory in relation to the growth and health of children. There is evidence to show that the effects may even be detrimental to development.

It seems desirable that a close study should be made of the influence on growth and health of schools of different types Much remains to be learnt concerning the effects of school routine on growth and health With our present knowledge it is unsafe to assume that any of our schools are providing the best possible environment for development

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* I am indebted to Dr G E Friend of the Medical Officers of Schools Association for permission to make use of his records published in "The Schoolboy His Nutrition and Development"

SCIENCE AND BUILDING

By the enterprise of the directors of the Building Centre in New Bond street the Department of Scientific and Industrial Research has been enabled to stage a very interesting exhibition at this centre And this is of importance because as the guide suggests, it is probably true to say that it has been left untouched to a greater extent than any other major industrial activity by the developments in science and technology of the last hundred years'

The exhibits from the Building Research Station include a section devoted to concrete, showing by graphs and descriptive matter how much the strength of concrete depends on its water content and the absence of air voids Samples are shown of the light weight aggregates which are used increasingly for concrete partition walls and casing for steel work. Plastering materials are apt to dry too slowly or too rapidly but the rate of drying can be controlled Deterioration of paint over plaster may be due to mere blistering and peeling owing to imprisoned water or to chemical action of alkaline materials on such paints as Prussian Blue

The Fuel Research Station illustrates the properties of various fuels, the radiant efficiency of open fires and the measurement of smoke emission from domestic fires

Among the exhibits from the Forest Products Research Laboratory is one showing the resistance of different timbers to erosion Rhodesian teak and Canadian maple wear more smoothly as flooring than oak birch jarrah or coniferous woods.

The National Physical Laboratory has exhibits of illumination and models of rooms with and without noise reducing devices; noise producers and telephones allow the visitor to make practical comparisons for himself Studies of wind pressure on buildings, vibration of roads and buildings and movement of the masonry of the Tower of London are illustrated and explained

Water softening by base-exchange materials, including some British clays and synthetic resins, contamination of water by lead and filters for removal of that metal and other such matters are set out in a joint exhibit of the Water Pollution Research Board and the Chemical Research Laboratory

This exhibition should be of value to all who may have to advise on the building of hospitals or other institutions and should help them to avoid mistakes which are sometimes made when materials are chosen for their artistic effect when new rather than for their permanent value in practical use

The exhibition closes on March 25th

DURATION OF LIFE IN FOSSIL MAN

An attempt to determine how long men lived in the remote ages has recently been made by H V Vallois a French anthropologist (*C.R Acad Sci Paris* Jan 4th 1937 p 60) The varied phases of eruption of the teeth and ossification of the limb bones may suffice to indicate the age of infants and adolescents but the problem proves much more difficult when adult bones are examined Vallois states that attrition of the teeth is an unreliable guide, since this occurred much earlier in prehistoric times than in living man, but more accurate work on synostosis of the cranial sutures enabled him to employ this sign as a basis in his investigation The remains of 173 men, women, and children of the palæolithic and mesolithic ages were studied, some by Vallois himself, and the data relating to the rest being deduced from descriptions published by other workers Piltdown man, pithecanthropus, and sinanthropus were not included in the survey

It was found that 45 of these prehistoric people died during the first decade and 17 in the second Thereafter Vallois separates the sexes and finds that in the third decade the females have a higher survival-rate, the figures being 27 against 17 The position is then reversed in favour of the males aged thirty to forty, when the figures are 12 against 7, and this superiority is conspicuous in the fifth decennium, *only 1 woman surviving to 10 men* Only 3 lived to be over fifty, and none showed the complete *synostosis commonly seen in adults after seventy or* eighty years of age It may be objected that the fragile skulls of old people would not be preserved, but it is pointed out that many even more delicate skulls of children have been discovered With regard to synostosis of the cranial sutures Vallois is of opinion that in fossil man the tendency would have been to an earlier fusion, since in primitive races it occurs a little earlier than in the civilised, while in anthropoids the cranium is completely ossified at an age equivalent to twenty-five years in man

The figures cited seem to indicate that fossil man was short-lived, only 10 of 39 men and 1 of 35 women reaching the fourth decade In these early ages man appears to have been subject to the law which governs savage mammifers, that death coincides with the decline of physical strength and sexual activity

In our issue of Feb 27th (p 517) we gave the price of the revised edition of Prof Curtis Hilliard's Textbook of Bacteriology and its Applications (London Ginn and Co) as 12*s* 6*d* Copies of the earlier edition of the book can still be supplied at this price, but the publishers inform us that the price of the new edition will be 15*s*

Vacancies

For further information refer to the advertisement columns

Accrington, Victoria Hosp —H S £150

Albert Dock Hosp Connaught road E —Res M O at rate of £110

Aylesbury Royal Buckinghamshire Hosp —Second Res M O , at rate of £150

Barbados General Hosp —Two Jun H S s each £325

Barnsley Beckett Hosp and Dispensary —Jun H S £200

Barnstaple, North Devon Infirmary —Res M O , at rate of £150

Barrow in Furness County Borough —Asst M O H and Asst School M O £500

Basingstoke, Park Prewett Mental Hosp —Second Asst M O £600 Also Jun Asst M O £350

Bath Royal United Hosp —H S to Ear, Nose, and Throat Dept , at rate of £150

Beckenham Bethlem Hosp , Monks Orchard —Two Res H.P s, each at rate of £150

Birmingham, Monyhull Colony —Res Asst M O £350

Bolton Royal Infirmary —Asst Res Surg O £200

Bootle County Borough —Asst M O H and Asst School M O , £500

Boston General Hosp —Res M O at rate of £150

Bradford Municipal General Hosp , St Luke s —H P s and H S s each at rate of £150

Bradford Royal Eye and Ear Hosp —H.S £180

Bradford Royal Infirmary —Two H P s three H.S s and Cas H.S each at rate of £150

British Postgraduate Medical School Ducane road W —Res Anæsthetist at rate of £150

Burnley Victoria Hosp —H P and H.S each at rate of £150

Burton-on Trent General Infirmary —H.S , £150

Canterbury Kent and Canterbury Hosp —H S at rate of £12

Cardiff Royal Infirmary —H S to Ear, Nose and Throat Dept , at rate of £100 Also Ophth H.S at rate of £40

Central London Throat Nose and Ear Hosp Gray s Inn road W C —Hon First Asst

Cheltenham General and Eye Hosps —H S £150

City of London Hosp for Diseases of the Heart and Lungs Victoria Park E —H P at rate of £100

Colonial Medical Service —Thirty Vacancies £600–£700 rising to between £1000 and £1200 *

Derbyshire Education Committee —Asst School M O £500

Doncaster Royal Infirmary and Dispensary —Res Anæsthetist at rate of £175

Dover Royal Victoria Hosp —Res M O £180

Dreadnought Hosp Greenwich S E —H P and H S , each at rate of £110

Durham, Richard Murray Hosp , Blackhill —H.S £200

Evelina Hosp for Sick Children Southwark, S E —H.S , at rate of £120 Also Ophth Surgeon 50 guineas.

Exeter, Royal Devon and Exeter Hosp —H.S to Ear, Nose and Throat Dept , at rate of £150

Gloucestershire Royal Infirmary —H S at rate of £150

Halifax General Hosp —Med Supt , £800

Halifax Royal Infirmary —Second H S , at rate of £175

Harefield County Sanatorium.—Physician, £1000

Harrogate, Royal Bath Hosp —Res M O , £150

Hosp for Sick Children, Great Ormond street W C —Res H.P and Res H S each at rate of £100

Hosp of St John and St Elizabeth 60 Grove End road N W —Res H S, at rate of £75

Hull City Hosp —Jun Res M O £350

Hull Royal Infirmary —H S to Ophth. and Ear Nose and Throat Dept , at rate of £150

Indian Medical Service —Commissions

Infants Hosp Vincent square Westminster, S W —H P , at rate of £100

Ipswich County Borough —M O H £1000

Lancaster County Mental Hosp —Asst M O , £500

Lancaster Royal Infirmary —Two Jun H.S 's, each at rate of £130

Leicester Royal Infirmary —Res Radiologist, at rate of £200

Leicestershire County Council —Asst County M O.H., £700

Liverpool Sanatorium, Delamere Forest, Frodsham —Sen Asst. to Med Supt , £325

London County Council —Two Res Med Supts , £1300 and £1100 Also Asst M O 's (Grade I), £350

London Homœopathic Hosp Great Ormond street W C —H P., at rate of £200

Lowestoft Borough and Port Sanitary District —M O H and School M O , £900

Manchester Ancoats Hosp —Res M O , at rate of £150 Also H S at rate of £100

Manchester Booth Hall Hosp for Children —Deputy Med Supt., £550

Manchester City —Asst Tuber O , £650

Manchester Royal Eye Hosp.—Jun H.S , £120

Manchester, Withington Hosp —Res Asst M O at rate of £200

Mansfield Harlow Wood Orthopædic Hosp —H.S , at rate of £200

Margate and District General Hosp —Res M O £150

Middlesbrough North Riding Infirmary —Cas O , at rate of £150

Newark General Hosp —Res H S , £175

Newcastle General Hosp —H.S , at rate of £150

Newcastle upon Tyne City Hosp for Infectious Diseases —Res Med Asst , £350

Newport, Mon Royal G cent Hosp —H P , at rate of £150 Also Cas O and H S , each at rate of £135

Norwich, Norfolk and Norwich Hosp —H S to Spec. Depts , £120–£160

Nottingham and Midland Eye Infirmary —Res H.S , at rate of £200

Nottingham City —Res Med Supt for City Hospital and M O for City Institution £1000 Also Asst M O 's for Maternity and Child Welfare Work and V D Clinic, each £500

Oxford University —Asst Director of Pathology £1000

Preston and County of Lancaster Royal Infirmary —Cas H.S £150

Princess Louise Kensington Hosp for Children St Quintin avenue W —Hon Radiologist H P , at rate of £100–£150 Also Part time Registrar, £100

Putney Hosp Lower Common S W —Res Surg O £150

Reading Royal Berkshire Hosp —H S Cas O and H.S to Spec Depts each at rate of £125

Richmond Surrey Royal Hosp —Jun H S at rate of £100

Royal Society of Medicine 1, Wimpole street W —Nichols Fellowship £150 &c

Samaritan Free Hosp for Women Marylebone road N W —H S at rate of £100

Seamen s Hosp Society Greenwich S E —Hon Asst Physician.

Sheffield Children s Hosp —H P at rate of £100

Southend on Sea General Hosp —H P and H S each at rate of £100

Stockport Stepping Hill Hosp —Res Asst M O , at rate of £400

Stoke on Trent Burslem, Haywood, and Tunstall War Memorial Hosp —Res H P , at rate of £150

Stoke-on Trent North Staffordshire Royal Infirmary —H.S at rate of £150

Sunderland Royal Infirmary —Cas O £150

Surrey County Council —Asst M O £600

Swanley Kent Hosp Convalescent Homes Parkwood.—Res M O , at rate of £200

Swansea General and Eye Hosp —H P at rate of £150

University College Hosp , Gower street W C —Hon Asst Surgeon in Ear Nose, and Throat Dept

University of London —S A. Courtauld Chair of Anatomy, £1000

Westminster Hosp , Broad Sanctuary S W —Asst Med Reg., at rate of £100

Willesden General Hosp Harlesden road N W —Cas O., at rate of £100

Wilts County Council —Asst M O £700

Wimbledon Hosp , Thursdan road, S W —Res M O at rate of £150

Wolverhampton Royal Hosp —H.S for Orthopædic and Fracture Dept at rate of £100

York Dispensary —Res M O , £175

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Malvern (Worcester) and Blyth (Northumberland)

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* In our last issue (p 59) this was incorrectly given as £1000–£1120

ADDRESSES AND ORIGINAL ARTICLES

HEART DISEASE WITH NORMAL RHYTHM COMPLICATING PREGNANCY

A SERIES OF ONE HUNDRED CASES

By Kenneth Harris M.D Camb F R C P Lond
PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL

The successful management of a normal pregnancy and labour is a subject to which an increasing amount of attention has been directed in recent years and is a matter that concerns both the physician and the obstetrician.

When pregnancy is complicated by chronic heart disease, it is of considerable importance that an attempt should be made to estimate the capacity of the patient's heart in relation to the increased strain on her cardiovascular system consequent on pregnancy Upon the power of adjustment of the heart may depend the successful delivery of a living child and the prevention of serious complications in the mother as well as the maintenance of the patient's health so that she is able to lead as nearly a normal life as possible.

A patient with valvular disease of the heart may seek advice from a doctor as to the advisability of pregnancy and the risks involved in both pregnancy and labour The enlarged uterus and the extra placental circulation required to maintain adequate nutrition of the fœtus will throw an increased burden on an already damaged heart moreover labour and the puerperium with the possible demands of lactation will also tax the resources of an inadequate cardiovascular system. Such things as the condition of the myocardium as shown by exercise tolerance congestive heart failure and the size of the heart will have to be carefully investigated, since each of these may have an important bearing on the prognosis

It is the purpose of this paper to show the effect of pregnancy and labour on women suffering from valvular disease of the heart with normal rhythm The problem is approached from the point of view of the physician who is concerned not merely with the care of the patient during her pregnancy but with her subsequent medical history For this purpose a series of 100 cases has been recorded in which the patient and her cardiac condition have been kept under observation for periods varying from two to four years Whilst this series was being collected only one case of auricular fibrillation was found it was, therefore decided to omit this case and to present this series as one of 100 cases of normal rhythm It may be remarked in passing that this percentage of cases of auricular fibrillation (1 per cent.) is abnormally low when compared with series recorded by other observers

The cases for observation were taken in order of their attendance at the antenatal and the medical out patient department of University College Hospital and the main object of the investigation was to complete a follow up of the cases over a period of at least two years Actually only 3 cases were lost sight of whilst 20 patients have been followed up for four or more years.

Of the various papers published on the subject during the last ten years reference will be made only to those in which histories of the patients have been followed up for a period of some months or years.

In 1926 a report on a group of 166 cases mainly from Guy's Hospital which had been investigated by Hunt was published after his death by Campbell. Hunt had followed up 98 of these patients after delivery; he attached considerable importance to the size of the heart and he also found that auricular fibrillation was a disastrous complication of heart disease in pregnancy

Corwin, Herrick, Valentine and Wilson (1927) carried out an analysis of 196 cases of valvular disease of the heart in pregnancy among patients attending the Sloane Hospital New York including an investigation of the after histories of 109 cases over periods varying from two months to two years Their investigation was mainly directed towards the effect of the cardiac condition on the management of pregnancy and labour rather than a consideration of the subsequent medical history

McIlroy and Rendel (1931) published a very full and comprehensive paper on their observations on 200 cases, mainly from the obstetrical point of view They were of the opinion that multiple pregnancies tended to lower the cardiac efficiency permanently They found that the anatomical lesion appeared to have little bearing on the prognosis They stressed the functional efficiency of the heart as a factor of importance

Crighton Bramwell (1931) presented a paper before the Royal Society of Medicine recording the results of an investigation of 82 cases carefully observed and followed up In 1935 he published a second paper in which the number of cases had been increased to 300—this included the original 82 cases. Of these cases 95 out of the first 150 had been followed up for various periods up to five years He found that patients admitted as emergencies were in a more serious condition (9 deaths out of 13 cases) than those who had been under medical supervision in the antenatal department (only 8 deaths out of 287) When first seen 21 had congestive heart failure and the prognosis in cases with this complication was grave There was auricular fibrillation in 16 (5 3 per cent.) and this was a serious complication. Concerning the degree of cardiac enlargement Bramwell stated that the bigger the heart the smaller the reserve and that other things being equal the presence of great cardiac enlargement added to the seriousness of the prognosis He did not think that the type of valvular lesion offered any help in the prognosis The outlook was worse in the first pregnancy than in other pregnancies; the mortality for the whole series was 5·7 per cent but in primiparæ the death rate was 9 per cent compared with 2 6 per cent in multiparæ He stressed the great value of adequate antenatal supervision

The mortality in the above mentioned series varied from 2 5 per cent (McIlroy and Rendel) to 11 per cent. (Hunt)

The incidence of congestive heart failure in the published series also varies considerably This difference can be easily accounted for since in some papers the figures are based on the number of patients showing congestive failure on admission whereas in others all cases developing congestive failure during the course of the pregnancy are included. Thus Bramwell found 21 out of 300 (7 per cent.) had congestive heart failure at the time of their first attendance whereas McIlroy and Rendel found that congestive heart failure occurred in the course of pregnancies on 51 occasions in 226 patients (22 5 per cent.)

Ætiology

The 100 cases in this series are examples of chronic valvular disease of the heart with the exception of one patient who was admitted as a cardiac case but who gave no history of rheumatic fever; she was found to have free aortic regurgitation due to a streptococcal endocarditis arising from pyorrhœa

In the whole series 65 per cent were definitely rheumatic Of these 35 patients gave a history of previous attacks of rheumatic fever of whom 5 had additional symptoms, 2 had had severe or frequent attacks of tonsillitis, 2 had suffered from growing pains in childhood, and 1 had had both growing pains and tonsillitis There were 12 patients who had suffered from both rheumatic fever and chorea The remaining 18 gave a history of chorea, of whom 1 had also had growing pains and 3 had had tonsillitis

A group of 16 patients gave a history of conditions not infrequently rheumatic in origin Of these, 11 had had tonsillitis, 3 had suffered from tonsillitis and growing pains, and 2 from growing pains only If these cases are included with the cases of rheumatic fever and chorea, the total would be 81 per cent

The remaining 19 patients gave no history of previous rheumatic fever, chorea, growing pains or tonsillitis

This series may, therefore, be taken as fairly representative of an average series of cases of valvular disease of the heart among young adults No definite difference in the prognosis or in the subsequent course was found between the rheumatic and non rheumatic group Moreover, in the 18 cases of congestive heart failure, the same proportion of rheumatic and non rheumatic cases was maintained—namely, 66 7 per cent *(12 out of 18 cases)* as compared with 65 per cent for the whole series

The Heart

Valve lesions—On considering the type of valve lesion occurring in the series, 81 cases of mitral stenosis, unaccompanied by other valve lesions, 13 cases of mitral stenosis and aortic regurgitation, and 6 cases of aortic regurgitation alone were found There was an associated high blood pressure in 3 of these cases, 2 of whom died, one of cerebral hæmorrhage and the other of cerebral thrombosis complicating congestive heart failure No difference was found in prognosis between cases of mitral stenosis and those of aortic regurgitation or those in whom both these lesions were present

The *size of the heart* has been carefully estimated at the time of the patient's first visit during the pregnancy and has been reviewed at intervals after delivery In all cases where there seemed to be any doubt as to the size of the heart, a radiogram at two metres or an orthodiagram has been taken The cases have been divided into two groups —

(1) Those having little or no clinical enlargement

(2) Those having moderate or considerable enlargement

The death rate was higher in the second group than in the first, the mortality being 16 3 per cent (7 out of 43 cases) as compared with 9 1 per cent (7 out of 77 cases) A comparison of the results at the end of two years revealed that the cases with little or no clinical enlargement did slightly better than the others Out of the former group 55 8 per cent were unchanged—i e, either free of symptoms or in statu quo—but only 35 9 per cent of the latter group were unchanged at the end of two years Thus patients in whom the heart was not clinically or only slightly enlarged did a little better than those in whom moderate or considerable enlargement was present

In any group of patients in whom valvular disease is present, however, similar results would be obtained when the cases are followed up over a period of two years Although the size of the heart is helpful in the prognosis of any cardiac case, it should not be unduly stressed in estimating the risk of pregnancy in a patient with valvular disease

Exercise Tolerance

The history of each patient has been carefully investigated, special attention has been paid to the amount of work and exercise that the patient has been able to undertake before she became pregnant and also during the early months of her pregnancy In the case of the multipara, inquiry has been made into the previous history of her former pregnancies and labours, and the time of breakdown of exercise tolerance, if any, in relation to the stage of the pregnancy A simple exercise tolerance test has been used in these patients to control conclusions arrived at from the history given, it was essential that the exercise should be simple and easily carried out in view of the pregnancy The method adopted has been to make the patient sit up and down and to touch her toes ten times, whilst on the examination couch, the pulse and respiration rates have been counted immediately before and after the exercise and again after two minutes' rest in the supine position

The exercise tolerance has been investigated at the time of the first examination during the pregnancy and subsequently at each attendance in the out patient department after delivery—i e, at six months, one year, and two years The alteration in the patient's exercise tolerance existing at the end of two years after delivery has been found to be almost invariably the same as that found at six months after delivery This was so in 73 out of 85 cases (85 9 per cent) seen at both six months and two years, 2 of the remaining 12 were better and the other 10 were worse at two years than at six months after delivery

Three patients (Cases 1, 2, and 3), who gave a history of earlier and earlier breakdown of exercise tolerance in successive pregnancies, did badly, two (Cases 2 and 3) developing congestive heart failure and one (Case 1B) dying soon after delivery The following is a typical example of such a case —

Case 3 first came under observation during her third pregnancy Her first pregnancy was seven years previously, when she had been confined to bed for two months after delivery owing to dyspnœa, although there had been no shortness of breath during the course of the pregnancy Five years ago she had her second pregnancy and dyspnœa commenced in the 6th month During the third pregnancy her exercise tolerance broke down at the 3rd month and congestive heart failure developed in the 9th month

Three patients (Cases 4A, 5, and 6A), who gave a history of early onset of dyspnœa and failure of exercise tolerance during the first pregnancy, developed congestive heart failure during the second pregnancy Two more patients (Cases 7 and 8), who gave a similar history of early exercise tolerance breakdown, died soon after labour, one after the second pregnancy and the other shortly after the first labour

From observation of these cases it seems that (1) early breakdown of exercise tolerance in a primipara is a grave sign—accordingly, a careful investigation of the history of the patient's exercise tolerance during the early months of her pregnancy is of great value, and (2) in multiparæ, the experience derived from the previous pregnancies is of great value, since the breakdown of exercise tolerance earlier and earlier in each successive pregnancy is a serious feature

Congestive Heart Failure

Of the 100 patients 18 developed congestive heart failure during the course of the pregnancy, in one patient congestive failure occurred in both her pregnancies, so that the incidence was 19 in 120 pregnancies (15 8 per cent) No patient in this series died during pregnancy or labour, but during the period following delivery when they were under observation, the mortality for those patients was

22 2 per cent. (4 out of 18 cases); whereas in those who had not had congestive failure the mortality was only 12 2 per cent (10 out of 82 patients) The mortality was higher when congestive heart failure occurred during the course of the first pregnancy than when it developed in a multipara. There were 5 primigravidæ who went into congestive failure, and 2 (40 per cent.) subsequently died 14 multiparæ had congestive failure during the course of the pregnancy and 2 (14 per cent) have since died.

Congestive heart failure has been found to appear at any time during the course of the pregnancy having been seen in the earliest stages and also just at full term The relationship between the time of onset and the subsequent prognosis of the case has been considered and the following results have been noted.

In 8 of the 19 cases congestive failure developed early* in the pregnancy whilst in the remaining 11 congestive failure came on in the later half of the pregnancy In the latter group 6 of the patients gave a history of early breakdown of exercise tolerance although the congestive failure did not occur till late but in the remaining 5 it was impossible to say whether the exercise tolerance broke down early or late in the pregnancy since the history given by the patient was too indefinite

None of the group of 8 patients, in whom congestive failure developed early went to full term: 1 had a spontaneous abortion 2 were induced and the remaining 5 had hysterotomy performed From the cardiac aspect all these patients did well with the exception of the patient who had a spontaneous abortion in her second pregnancy; she died in congestive heart failure having had failure also in her first pregnancy It is probable that the successful results in these patients depended largely upon the treatment adopted in each case When congestive heart failure developed towards the end of pregnancy the patients did badly 3 out of the 11 dying shortly after delivery

If the patient was admitted to hospital in time to enable suitable therapeutic measures and rest to be carried out before delivery and if as a result she was no longer in congestive failure the prognosis became more favourable Thus only 1 patient died out of the 11 in whom congestive failure had disappeared at the time of delivery whereas 3 died out of 7 patients in whom delivery took place while signs of congestive failure were still present.

Occasionally cases occur in which congestive heart failure does not react to appropriate medical treatment In the later months this may be the result of the mechanical effect of pressure by an enlarged uterus interfering with the normal action of the heart and lungs In the earlier months however this mechanical factor is not present and the congestive heart failure must result from the extra load thrown upon the heart from the vascular changes occurring in the enlarging uterus This is supported by a case in this series in which progressive congestive failure in the early months of pregnancy cleared up rapidly after artificial termination

Case 2 was admitted to hospital in 5th month of pregnancy in congestive heart failure; after 8 weeks of treatment it was decided to induce premature labour at the 31st week of pregnancy since the congestive failure was progressive After delivery she made an excellent recovery and the congestive failure rapidly cleared up She was alive but worse 4 years after delivery

It is fairly widely held (Pardee 1922 Corwin et al 1927) that induction of abortion or premature labour during congestive heart failure almost invariably leads to a fatal result. Two cases in this series were induced in such circumstances; both survived and lived for more than two years. One (Case 2) has just been described the other is the following:—

Case 9 primigravida first entered hospital at 3rd month of pregnancy with congestive heart failure; she failed to react to treatment and as the congestive failure was increasing induction was carried out at 27th week. The progress of the congestive failure was arrested but did not clear up She was readmitted 2½ years later twenty weeks pregnant since she was still in congestive failure She died 13 days after spontaneous abortion

Two other patients in whom congestive heart failure was present in one pregnancy subsequently became pregnant again both cases went through the next pregnancy and were successfully delivered at full term without the development of congestive failure (Cases 5 and 10) This was attributed to earlier and better supervision during the antenatal period owing to the experience gained during the conduct of the former pregnancy

Since the onset of congestive heart failure was a serious feature during the course of pregnancy the previous history of those patients who developed congestive failure was investigated Short intervals between pregnancies seemed to be a factor in the production since in 5 out of 6 multiparæ the interval between the former pregnancy and the one in which congestive failure developed was under two years The length of time between the pregnancy in which congestive failure occurred and the rheumatic infection which may have caused the heart lesion (when known) did not appear to have any significance Early breakdown of exercise tolerance was important In 3 cases in which exercise tolerance broke down early in the first pregnancy congestive failure developed in the second pregnancy (Cases 4A, 5 and 6A) Of 9 patients who had had several children 3 gave a clear history of earlier and earlier breakdown of exercise tolerance in former pregnancies and developed congestive failure in the pregnancy during which they came under observation

The incidence of premature delivery was 42 9 per cent in those cases who had had congestive heart failure during pregnancy being much greater than in those who did not have failure (14 6 per cent.). The incidence of premature delivery in the whole series was 16 5 per cent †

Follow-up Results

All cases have been examined personally at 6 months, 1 year and 2 years after delivery Three [illegible] who did not attend for various reasons [illegible] change of address were traced by the [illegible] and the district midwives, to whom [illegible] indebted for this assistance In 5 cases a personal visit was made to the patient's home and [illegible] examined in her own home. Only 3 [illegible] of the 100 patients have been lost sight of [illegible] period of 2 to 4 years

In this way 97 cases were [illegible] under observation. Of the 3 cases [illegible] of two could not be traced [illegible] known to be alive and doing her housework [illegible] after delivery but refused any examination [illegible] had however been examined 1½ [illegible] and was then free of symptoms

The mortality [illegible] 14 per cent [illegible] patient died during [illegible] labour (Table [illegible] The number of [illegible] here is high [illegible] compared with [illegible] of other [illegible] because the period of observation has been longer than in many of the series hitherto published, and also because the total has included 4 non cardiac deaths These 4 deaths were due to cerebro spinal meningitis (Case 14A), influenzal septicæmia (Case 13), septic peritonitis (Case 12), and rupture of the aorta (Case 11A), in the latter the aorta was quite healthy and the rupture was in no way connected with the cardiac condition The puerperal mortality—i.e , deaths occurring within six weeks of delivery—excluding those who died of non cardiac causes, was only 5 per cent (Cases 1B, 15, 16, 17, 18)

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* Early pregnancy has been taken as the 1st to 4th month; late pregnancy from the 5th month to full term

† It has [illegible] the incidence [illegible] delivery [illegible] given by [illegible] Recent [illegible] 16 per [illegible] 14 2 per [illegible] per cent

TABLE I—*Deaths*

Case No	Valve lesion	CHF	Treatment	Date of death	PM	Cause of death
			A —NON-CARDIAC DEATHS			
11	MS	0	1st normal labour 2nd spontaneous premature labour	1¼ yrs 3rd day	Yes	Rupture of normal aorta
12	"	0	Hysterotomy at 26th wk	4th day	No	Septic peritonitis
13	"	0	Normal labour	17th day	No	Influenza vera and streptococcal septicæmia
14	"	0	1st } normal 2nd } labour	1 yr 2nd day	No	Cerebro spinal meningitis
			B —DEATHS DURING PUERPERIUM			
1	MS and AR	0	1st forceps at full term 2nd } normal 3rd } labour	3½ yrs 1¼ yrs 1½ mths	No	CHF
15	MS	+	Cæsarean section	6th day	No	Post-operative broncho pneumonia
16	MS and AR	0	Delivery of breech by intra uterine manipulations	3 hrs	Yes	Post-partum hæmorrhage and shock
17	"	+	Forceps at full term	7th wk	No	CHF
18	AR	0	Normal labour	8th day	Yes	Acute infective endocarditis
			C —OTHER DEATHS			
7	MS	0	*Manual rotation and forceps*	6¼ mths	Yes	*Acute heart failure*
8	MS	+	Normal labour	2nd mth	Yes	CHF
9	"	+	1st, induction at 27th wk 2nd spontaneous abortion at 20th wk	2¼ yrs 13th day	Yes	CHF
19	MS and HBP	0	Normal labour	6¼ mths	Yes	Cerebral hæmorrhage
21	AR and HBP	0	Induction at 12th wk	4 mths	Yes	Cerebral thrombosis

MS = Mitral stenosis AR. = Aortic regurgitation
HBP = High blood pressure CHF = Congestive heart failure
PM. = *Post mortem examination*

The patients who were still alive at the end of 2 or 4 years have been placed in three groups those who were free of all symptoms (10 cases), others in whom the cardiovascular system seemed unchanged (35 cases), and the remainder who were definitely worse after than before the pregnancy (38 cases) These results were arrived at by carefully comparing the condition of the heart and the results of the exercise tolerance tests, as well as the patient's history, at the time of the final examination, with the notes made at the time of the first examination The results are shown in Table II, it will be seen that just half of the whole series were worse or dead at the end of two years

TABLE II—*Results of Follow up*

—	Total (100)	At 2 yrs	At 4 yrs
Free of symptoms	11*	10	0
Unchanged	37†	25	10
Worse	38	28	10
Dead	14	12	[illegible]

* Includes 1 lost sight of at 1¼ years
† Includes 2 lost sight of, at 1 and at 1¼ years respectively

Summaries of Cases Quoted

CASE 1

FIRST PREGNANCY —Primipara aged 22 *Heart* Fair exercise tolerance, not clinically enlarged, M S and A R ‡, rheumatic fever at 16 years *Course* A few attacks of paroxysmal tachycardia *Delivery* Forceps at full term owing to paroxysmal tachycardia during labour, female child, 6 lb 10 oz *Follow up* Pregnant again

A. SECOND PREGNANCY —*Course* 8 or 9 attacks of paroxysmal tachycardia *Delivery* Normal labour at full term, female child, 7 lb 1½ oz *Follow up* Pregnant again

B THIRD PREGNANCY —*Course* Frequent attacks of paroxysmal tachycardia *Delivery* Normal labour premature female child, 6 lb *Death* At home from C H F at 1½ months after this and at 3½ years after first labour

CASE 2

Aged 34, 3 para *Heart* C H F developed at 4th month, slightly enlarged, M S, rheumatic fever and chorea at 10 years *Course* C H F did not clear up with rest, &c *Delivery* Induction of labour at 31st week *Follow up* C H F cleared up rapidly after delivery Sterilisation at 6th month after labour At 4 years, worse

CASE 3

Aged 34, 3 para *Heart* C H F at 8½ months, moderately enlarged, M S, no rheumatic history *Course* C H F not quite cleared up at time of labour *Delivery* Normal labour at full term, female child, 5 lb 15 oz *Follow up* At 4 years, worse

CASE 4

FIRST PREGNANCY —Primipara aged 27 *Heart* Poor exercise tolerance, slightly enlarged, M S, chorea at 7 years *Delivery* Normal labour premature male child, 6 lb 2 oz *Follow up* Pregnant again

A. SECOND PREGNANCY —*Course* During this pregnancy developed C H F at 8th month C H F cleared by time of operation *Delivery* Cæsarean section and sterilisation at full term, male child, 6 lb 1 oz. *Follow up* At 2¼ years after former labour, worse

CASE 5

FIRST PREGNANCY —Aged 25 2 para *Heart* Poor exercise tolerance, moderately enlarged, M S, growing pains as a child *Course* C H F developed at 8th month gone at full term, exercise tolerance broke down at 3rd month *Delivery* Normal labour at full term, male child, 5 lb 10 oz *Follow up* Pregnant again

A SECOND PREGNANCY —*Course* No C H F during this pregnancy *Delivery* Normal labour at full term male child 7 lb 3 oz *Follow up* At 2¼ years after former labour, worse

CASE 6

FIRST PREGNANCY —Primipara aged 35 *Heart* Good exercise tolerance, not clinically enlarged, M.S, rheumatic fever at 15 years *Delivery* Breech delivery at full term male child 5 lb 2 oz. *Follow up* Pregnant again.

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‡ Abbreviations as in Table I

A. SECOND PREGNANCY —*Course* C H F at 3rd month clearing up by time of operation. *Delivery* Hysterotomy and sterilisation at 4th month *Follow-up* At 2½ years after this and at 3½ years after former delivery worse

CASE 7

Aged 23; 2-para *Heart* Very poor exercise tolerance moderately enlarged M.S chorea at 13 years. *Delivery* Manual rotation and forceps premature male child. *Death* At 6th month acute heart failure P.M.

CASE 8

Primipara aged 25 *Heart* Poor exercise tolerance; slightly enlarged M.S no rheumatic history *Course* Exercise tolerance broke down at start of pregnancy C.H.F developed at full term *Delivery* Normal labour at full term male child 5 lb 1 oz. *Death* At 2nd month C.H.F P.M

CASE 9

FIRST PREGNANCY —Primipara aged 24 *Heart* C H.F at 2nd month slightly enlarged M S; chorea at 7 and 14 years *Course* C H F progressive in spite of rest &c *Delivery* Induction of labour at 27th week *Follow-up* Pregnant again

A. SECOND PREGNANCY —*Course* C H.F had persisted since 1st pregnancy *Delivery* Spontaneous abortion at 20th week. *Death* At 2½ years after 1st delivery and on 13th day after abortion from C.H F P.M

CASE 10

FIRST PREGNANCY —Aged 36; 5 para *Heart* C H.F at 8th month moderately enlarged; M.S rheumatic fever at 12 years *Course* C H F cleared up by delivery *Delivery* Normal labour premature female child *Follow-up* Pregnant again.

A. SECOND PREGNANCY —*Course* No C H F during this pregnancy *Delivery* Normal labour at full term dead female child 5 lb 11 oz *Follow-up* At 4 years after this and 5½ years after former labour worse

Conclusions

1 A hundred cases of pregnant women suffering from valvular disease of the heart with normal rhythm have been examined during pregnancy Only 3 cases have been subsequently lost sight of the remainder have been kept under observation for at least 2 years after delivery and of these 20 have been followed up for 4 or more years No case died during the course of the pregnancy or labour

2 In the management of a case a careful investigation of the history of the patient s exercise tolerance before and during the early months of the pregnancy is of great importance Early breakdown of exercise tolerance in a primipara is a grave sign since death may occur soon after labour or congestive heart failure is likely to supervene with its attendant grave risks In multiparæ the experience derived from the previous pregnancies is of great value since the breakdown of exercise tolerance earlier and earlier in each successive pregnancy is a serious feature for the same reason.

3 The appearance of congestive heart failure is serious in a pregnant patient with cardiac disease The subsequent mortality was greater in those patients in whom this occurred than in those in whom it did not and particularly in the primipara Where congestive failure developed early in the pregnancy the cases did well possibly as a result of obstetrical treatment; those in whom the failure developed late did badly particularly if the failure had not cleared up at the time of delivery A short interval between pregnancies increases the risk of congestive failure in a cardiac case The incidence of premature delivery was much increased in cases developing congestive failure during pregnancy whereas it was not increased in the other cardiac cases

4. Cases with slight or no enlargement of the heart did better than those with moderate or considerable enlargement There appeared to be no difference in the prognosis between cases of mitral stenosis, those of aortic regurgitation and those in whom both these lesions were present.

5 Pregnancy is contra-indicated in those cases of heart disease with normal rhythm who have ever had congestive failure in whom the exercise tolerance broke down early in a previous pregnancy or where the heart is considerably enlarged. Where congestive failure appears early in the course of a pregnancy termination by emptying the uterus should be undertaken as soon as the failure has been relieved by rest and other medical measures During the pregnancy careful supervision and increased rest with admission to hospital for at least two weeks before the onset of labour is necessary for the successful management of a case of heart disease complicating pregnancy

I am greatly indebted to Prof F J Browne director of the Obstetric Unit and his staff, and to Sir Thomas Lewis and the physicians of University College Hospital for leave to examine and follow up this series of patients I also wish to thank Sir Thomas Lewis for his encouragement and advice throughout this investigation.

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THE CHEMOTHERAPY OF TYPHOID AND SOME OTHER NON STREPTOCOCCAL INFECTIONS IN MICE

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FOLLOWING the work of Domagk (1935) on Prontosil, *p* aminobenzenesulphonamide was shown to be effective in the treatment of mice against intraperitoneal infection by streptococci (Tréfouël J and Mme Nitti and Bovet 1936 Buttle Gray and Stephenson 1936 Colebrook and Kenny 1936) and meningococci (Buttle et al. 1936; Proom 1937)

In this paper we describe the results obtained in treating mice infected with various other organisms—viz *Bacterium typhosum Bact paratyphosum* B *Bact aertrycke* pneumococcus Friedländer s bacillus and pasteurella The degree of protection is also compared with that previously reported from the Wellcome Physiological Research Laboratories for the hæmolytic streptococcus and the meningococcus

TECHNIQUE

Infection of Mice —A number of strains of each organism were obtained and the most virulent selected for this investigation All the organisms were grown for 18 hours in the medium described by O Meara and Brown (1930) the cultures were diluted in broth and 0·5 or 1·0 c.cm amounts injected intraperitoneally into mice of 25 to 30 grammes in weight Dilutions of some of the strains were also made in 5 per cent mucin, using a method similar to that of Miller and Castles (1936) in their work on the titration of antimeningococcus serum The mucin produced a considerable diminution in the minimal fatal dose, an observation which has already been made by Miller (1935) for the meningococcus, and by Rake (1935) for *Bact typhosum* The virulence of the strains tended to decrease when they were kept on artificial media, but was restored to some extent by mouse passage

Treatment with the Sulphonamide —The drug was given to the mice by mouth in suspension with gum acacia using a 1 c cm syringe with a blunted needle In preliminary experiments on dosage a single injection of 100 mg was tolerated by mice of 25 to 30 g , but produced a temporary paralysis with incoördinate movements of the limbs which lasted four to five hours Doses of 40 mg and 25 mg were therefore used for the present investigation and produced no symptoms

The general scheme of treatment was to give one group of mice a single injection of the drug, and a second group injections twice daily, commencing treatment in each case immediately after infection A third group received their first treatment five hours after infection, and thereafter two doses a day as for the second group

TABLE I

Treatment of Mice Infected with Bact typhosum (“ *Rawlings* ”—*rejuvenated*)

Treatment with the sulphonamide	Approx number of organisms in infecting dose *	Number of mice (out of groups of 10) dying on each day after infection				Mice surviving 12 days
		1st	2nd	3rd	6th	
ORGANISMS INJECTED WITHOUT MUCIN						
None	50 000					10
	500 000	5	5			0
	5,000 000	10				0
25 mg twice daily	5 000 000					10
	50 000 000	1	1			8
	500,000 000	10				0
Single dose (25 mg)	5,000,000		2			8
	50 000,000	1	2			7
25 mg twice daily (first dose delayed 5 hours)	5,000,000	2		1		7
	50 000,000	7	1		2	0
ORGANISMS INJECTED IN SUSPENSION WITH MUCIN †						
None	50	3	1			6
	5 000	7	2	1		0
	500,000	10				0
25 mg twice daily	5,000					10
	500,000					10
	50 000,000	6	3	1		0

* As judged by opacity method checked by serial dilutions in Wright's broth and colony counts on Wright s agar plates

† Ten mice injected with mucin alone, and 10 mice injected with mucin and treated with the sulphonamide all survived

BACT TYPHOSUM

Three strains were used of approximately equal virulence—viz , “ Rawlings ” (rejuvenated), “ Allahabad,” and “ Mrs S ,” all of which were kindly supplied by Major J S Boyd, R.A M C Experiments have been made, with and without mucin, a typical protocol (strain “ Rawlings ”) being shown in Table I

In the first section of the experiment, no mucin was used to enhance virulence Of 20 treated mice (2 groups of 10 animals infected with 50 million organisms and treated immediately) 15 were alive twelve days after the injection of 100 times the number of organisms (500 thousand) required to kill all 10 control mice In the second section, in which mucin was used as a diluent for the culture, protection was obtained against a slightly larger number of fatal doses , a group of 10 treated mice, injected with 10 thousand times the number of organisms required to kill 4 of 10 controls, all survived for twelve days (In another experiment treated mice were kept for one month, and no deaths occurred after the twelfth day)

A single dose of 25 mg of the sulphonamide was almost as effective as doses of 25 mg repeated twice daily for 6 days When treatment was delayed for five hours after infection, the result was not as good as with immediate treatment, although some protection was still demonstrable

In these experiments we were able to isolate *Bact typhosum* from the heart blood, spleen, and, less often, the kidney of some apparently healthy mice one week after infection and treatment After one month a positive culture was obtained from the spleen of one of twelve mice examined, and serum tests sometimes showed the presence of agglutinins We also found that treated mice which survived seemed to possess slight active immunity to a second infecting dose one to four weeks later (This phenomenon has not been observed in experiments on the treatment of hæmolytic streptococcal infections in mice)

BACT PARATYPHOSUM

Bact paratyphosum A strains were not used since those available were of relatively low virulence

We tested two recently isolated, highly virulent *paratyphosum* B strains which Prof. Hedley Wright kindly sent us It was unnecessary to use mucin as 500 organisms killed 60, and sometimes 100, per cent of mice within 48 hours of infection Protection was obtained against 100 to 1000 fatal doses, when treatment with the drug was either a single dose given immediately after infection, or a similar dose repeated twice daily “ Delayed treatment ” was less effective than immediate treatment The majority of the deaths occurred before the third day of observation, irrespective of the method of treatment

BACT AERTRYCKE

Altogether six strains were used, three of which were isolated from guinea pigs, one from a mouse, and two from human subjects We are indebted to Prof W W C Topley for two of the strains, and to Dr F A Knott for one Suspensions in 5 per cent mucin of all the cultures were virulent for mice, and gave very similar results with treatment

A single dose of the sulphonamide produced a slight, but definite, retardation in the time of death. When administration of the drug was “ delayed for five hours ” after infection and repeated twice daily, the treated mice survived for only two to three days longer than the controls

The best effect was obtained with repeated doses of the sulphonamide (Table II), but even here the protection was only temporary Treatment produced delay in the time of death of mice infected with a large dose of culture (10,000 fatal doses), but the majority of these animals died within a few days of the controls Only some of the mice infected with approximately one fatal dose could be kept alive for twelve days

The *Bact aertrycke* survived for several days in treated mice although the mice appeared healthy, the blood, spleen, and gall bladder all gave a growth of the organism seven days after infection, and a positive culture was obtained from the spleen of one animal which had survived for eighteen days

TABLE II

Treatment of Mice Infected with Bact aertrycke (*with Mucin**)

Treatment with the sulphon amide	Approx number of organisms in infecting dose	Number of mice (out of groups of 10) dying on each day after infection							Mice surviving 12 days
		1st	2nd	3rd	4th	5th	6th	7th–12th	
				GUINEA-PIG STRAIN G 620					
None	5 000	5	3	1			1		0
	500,000	9	1						0
40 mg twice daily	5 000				2				8
	500 000					3		4	3
				HUMAN STRAIN A 6					
None	50	1	5		1	3			0
	500 000	9	1						
25 mg twice daily	50							6	4
	500 000				2	5	1	2	0

Ten mice injected with mucin alone and 10 mice injected with mucin and treated with the sulphonamide all survived.

FRIEDLÄNDER'S BACILLUS

One strain of exceptional virulence was selected from a series sent from the National Collection of Type Cultures through the courtesy of Dr St John Brooks A protocol of a typical experiment made with this strain is appended (Table III) The outstanding feature was that frequent doses of the sulphonamide gave temporary protection only Although, at an early stage of the experiment mice infected with 10 000 fatal doses appeared healthy it was only those animals which had received approximately one fatal dose which survived for twelve days.

TABLE III

Treatment of Mice Infected with Friedlander's Bacillus (Strain 12) (Without Mucin)

Treatment with the sulphon amide.	Approx number of organisms in infecting dose	Number of mice (out of groups of 10) dying on each day after infection.							Mice surviving 12 days.
		1st	2nd	3rd	4th	5th	6th	7th–12th	
None.	1			1	5				4
	10		1	5	4				0
	100	4	6						0
	1 000	9	1						0
25 mg twice daily	1								10
	10		1		1	1		5	2
	100			1	4	2	3		0
	1 000		1	2	7				0
	10,000			10					0
	100 000	1		9					0
	1,000 000	1	6	3					0

It is probable that the infection produced in mice by a number of other members of the genus bacterium may be influenced by the sulphonamide Since this paper was written, slight protection was obtained against a Gram negative slow lactose fermenting bacillus which was highly virulent for mice It was isolated by Dr David Haler from a case of adult dysentery but does not conform to any of the recognised features of the dysentery group. Dr Haler informs us that a similar organism is sometimes associated with pyelitis and with infantile dysentery

PNEUMOCOCCUS

It has already been reported (Buttle et al 1936) that the sulphonamide has little effect in the protection of mice against infections by the pneumococcus Type I In view of the effect obtained against other infections by repeating the doses of sulphonamide at short intervals experiments on the treatment of pneumococcal infections were resumed.

In the control series groups of 6 mice were killed within forty-eight hours by infecting doses of approximately 5 pneumococci Type I Groups of treated mice (40 mg twice daily) infected with 5 and 500 pneumococci appeared healthy for the first three days but some deaths were observed on the fourth day and by the twelfth day all the mice had died

The experiment was repeated with another virulent strain of pneumococcus Type II The time of death of the treated mice was delayed a little longer than in the case of the infection with the Type I strain.

Rosenthal (1937) studied the effect of the sulphonamide on mouse infections with a number of pneumococcal strains of Types I II and III He reported that 25 to 50 per cent of the treated mice survived for seven days and, in the case of one strain 86 to 100 per cent of mice were cured. The sulphonamide was injected subcutaneously in emulsion with olive oil. It is possible that strain variation may explain the difference between Rosenthal's results and ours, although another factor may have been the method of administration of the drug

PASTEURELLA

Preliminary work would suggest that the drug has a temporary and very slight beneficial effect against infections with *Past. pseudotuberculosis* and *Past septica*. Further experiments are projected in view of the relationship between these organisms and *Past. pestis* *

Effect of the Sulphonamide in vitro

Only three of the above organisms have been studied so far—viz *Bact aertrycke Bact typhosum* and pneumococcus

BACT AERTRYCKE

The inhibitory effect of *p*-aminobenzenesulphonamide on the rate of growth of this organism in culture medium in vitro is not nearly so great as that found with the streptococcus (Colebrook, Buttle and O'Meara 1936) An inoculum of approximately 8 organisms of our guinea pig strain G 620 grows in the broth medium described by Wright (1933) and the addition of 0·1 per cent. of the sulphonamide does not inhibit the growth appreciably (see also Nitti Bovet and Depierre 1937) If the tubes are incubated anaerobically however the addition of 0 1 per cent sulphonamide inhibits growth for sixteen hours.

If the organisms are grown in defibrinated human blood (G A H B) and incubated in slowly rotating tubes it is necessary to use an inoculum of 1 000 000 organisms in 0 5 c.cm of blood to obtain growth (an inoculum of 100 000 organisms is destroyed by the blood itself) The addition of 0·01 per cent of the sulphonamide to the blood produces a slight bactericidal effect 1 000 000 organisms are destroyed but there is no appreciable effect on an inoculum of 10 000 000 organisms. If the leucocytes are removed from the blood by the method described by Fleming (1926) *the addition of 0·01* per cent of the sulphonamide does not influence the growth of an inoculum of 1 000,000 organisms With streptococci on the other hand the addition of 0·01 per cent of the sulphonamide considerably delayed the growth of the cocci even in blood from which the leucocytes had been removed As the sulphonamide produces so little inhibition of growth of

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* *Staphylococcus*.—Since this paper went to press we have tested for virulence a number of strains of staphylococci isolated from bovine and canine sources by Prof F C Minett One bovine strain was of exceptional virulence mice being killed within 48 hours by approximately 50 organisms suspended in mucin Treated mice that had received 1000 fatal doses survived for upwards of 12 days In our previous work with a large number of human strains we did not find any organisms of sufficient mouse-virulence to enable us to demonstrate any degree of protection

Bact aertrycke in culture medium or in deleucocyted blood it seems possible that, in whole blood, it may act by rendering the organisms more susceptible to phagocytosis (see also Long and Bliss 1937)

The effect of the sulphonamide on the growth of *Bact aertrycke* in vitro appeared to be so slight that experiments have been carried out to determine whether there was any other factor contributing towards the recovery of the treated mice

The serum taken from two treated mice seven days after infection did not agglutinate *Bact aertrycke* Treated mice which had survived for two weeks were just as susceptible as normal mice to a further injection of culture

In another experiment, a group of six mice was injected intraperitoneally with the soluble polysaccharide prepared by Prof Topley, from the mouse strain of *Bact aertrycke* and very kindly sent to us for the investigation, a second group of 6 mice, similarly injected with the polysaccharide was treated with the sulphonamide, and a third group received mixtures of the sulphonamide and the polysaccharide. The mice in the treated groups died at the same time as the controls which had not received the sulphonamide

BACT TYPHOSUM

The results of tests with this organism were similar to those obtained with *Bact aertrycke* In preliminary experiments the drug produced little inhibition of growth in broth, whereas a definite bactericidal action was demonstrable in defibrinated whole blood An inoculum of 100,000 organisms grew in normal blood, whereas in blood containing 0 04 per cent of the sulphonamide 1,000,000 organisms were killed, and 10,000,000 were inhibited for 18 hours

PNEUMOCOCCUS

Although the treatment of pneumococcal infections in the mouse is even less effective than the treatment of *Bact aertrycke* infections, the inhibition of growth of the pneumococcus, Type I, in a broth medium is nearly as great as that obtained with the hæmolytic streptococcus and very much greater than that with *Bact aertrycke* Thus, 0 01 per cent of the sulphonamide prevents the growth of 50 pneumococci in broth, while 0 1 per cent of the sulphonamide is almost without effect on the growth of a smaller inoculum of *Bact aertrycke* If, however, the pneumococci are grown in defibrinated human blood (G A H B), incubated in slowly rotating tubes, the effect of the sulphonamide is only very slight The cocci grow in twenty four hours from a very small inoculum—3 organisms—with or without the addition of 0 01 per cent of the sulphonamide, the growth in the blood containing the sulphonamide, however, is not as rapid as in the controls The results of experiments in vivo, therefore, correspond more closely with those obtained in vitro in blood than with those in culture medium

The above results of in vitro tests are of a preliminary nature, only one strain of each of these organisms having been tried with the blood of two individuals Further work is clearly necessary on the action of the sulphonamide on several strains of organisms in vitro in the blood of different individuals

Discussion

The foregoing experiments show that the early oral administration of *p* aminobenzenesulphonamide prevents or delays the development of septicæmia and death in mice infected with a number of different organisms An attempt has been made to summarise the available data in Table IV, earlier results with the hæmolytic streptococcus and meningococcus are included for purposes of comparison It is emphasised that the figures are only approximations and depend to some extent on the virulence of the organisms used

It will be seen that there are three grades of protection In the first group, intensive treatment with the drug merely delays the death of the mice, in the second, frequent doses are requisite if the protection is to be other than temporary, and, in the third, a single dose given immediately after infection produces a maximal effect

With regard to the rôle of the sulphonamide, evidence has been adduced that the drug has an inhibitory effect on the multiplication of small numbers of streptococci and various other organisms in vitro in broth medium and in deleucocyted blood It is almost certain that this also occurs in the blood in vivo, but it is probable that here the leucocytes also play a part Long and Bliss (1937) observed a marked degree of phagocytosis by the leucocytes in the peritoneal exudate of mice infected with hæmolytic streptococcus and treated with the sulphonamide, there was no evidence of phagocytosis in the untreated controls These authors therefore believe that the drug has an important action in injuring the organisms and making them more susceptible to phagocytosis In our experiments on *Bact aertrycke* and *Bact typhosum*, we obtained some support for this view, we could demonstrate a slight bactericidal effect for the sulphonamide in whole blood in vitro, but in deleucocyted blood or culture medium there did not appear to be a definite diminution in the rate of growth.

TABLE IV

Grades of Protection with p *Aminobenzenesulphonamide*

—		Approx number of fatal doses against which mice are protected	
		For 2 days	For 12 days
A Frequent doses give temporary protection only	*Bact aertrycke*	10 000	1
	Friedländer's bacillus	10 000	1
	Pneumococcus	100	0
	Past pseudo tuberculosis	100	0
	Past septica	100	0
B Frequent doses give lasting protection (Single dose gives temporary protection)	*Streptococcus hæmolyticus*	10 000	
C Single dose gives lasting protection	Meningococcus	1 000 000	
	Bact typhosum	*100–1000*	
	Bact para typhosum B	100–1000	

The drug is now being tried in the treatment of hæmolytic streptococcal and also in a few meningococcal infections in man, but the results of the mouse experiments would suggest that it might have an even wider application In certain infections, the action is probably insufficient to be of clinical value by itself, and, in these, the sulphonamide might possibly be useful in conjunction with other measures—*e.g.*, therapeutic serum in the treatment of pneumonia

Summary

p Aminobenzenesulphonamide protects mice against multiple lethal doses of *Bact typhosum* and *Bact paratyphosum* B There is some degree of protection against *Bact aertrycke*, Friedländer's bacillus, pneumococcus, *Past pseudotuberculosis*, and *Past septica*

A single dose of the sulphonamide gives lasting protection against some of these organisms, repeated doses lead only to delay in the death time of the mice infected with others

In no instance are the results of treatment as satisfactory as in hæmolytic streptococcal and meningococcal infections

(References at foot of opposite page)

THE EFFECT OF COMPRESSED-AIR BATHS UPON THE VITAL CAPACITY IN EMPHYSEMA

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The compressed air chamber as used in the Brompton Hospital was introduced into this country about fifty years ago and was originally employed in the treatment of almost any chest disease Soon its limited value was discovered and its range became narrowed In 1894 Dr Theodore Williams[1] reported on its use in chronic bronchitis with emphysema and in asthma Of the former disease he had treated 33 cases, of which 26 improved of the latter 15 cases, of which 12 improved. It was suggested in this paper that the results were due to an increase in lung capacity gained by the forcing open of alveoli previously out of use

It is obvious that a patient suffering from difficulty in oxygenating his blood, due either to insufficiency of normal alveolar epithelium or to the limitation of respiratory movements will benefit from an increase in the partial pressure of oxygen in the atmospheric air while this lasts The normal partial pressure of oxygen is 20 per cent of 760 mm of mercury (i.e 152 mm.) but in the compressed air chamber, where the pressure rises to a maximum of one and two thirds of atmospheric pressure the partial pressure of oxygen will correspondingly rise to 5/3 of 152 (i.e 257 mm. of mercury) and this may well explain the marked increase in comfort which an emphysematous patient experiences while actually in the bath. This effect is however essentially a temporary one and lasting benefit can result only if the respiratory excursions are amplified as the result of the increased pressure, or if some alveoli are brought into use which previously had been dormant by reason of spasm or occlusion

In order to test whether the compressed-air bath does bring into use previously dormant alveoli nine patients suffering from moderately severe emphysema were examined while undergoing this treatment and vital capacity estimations were made before and after treatment (see Table) The initial vital-capacity reading in each case was considerably below the calculated normal reading In addition each patient showed clinical and radiological evidence of generalised emphysema. The course of treatment under observation lasted about two months and each patient attended twice weekly At each treatment the pressure was increased gradually until it reached one and two thirds atmospheres at the end of half an hour This was maintained for one hour and during the last half hour the bath was gradually decompressed. In some of the cases under observation the respiratory rate was noticed to drop to nine or ten per minute

VITAL CAPACITY READINGS BEFORE AND AFTER TREATMENT

Vital capacity readings were taken at every third treatment before after and once during the compressed-air bath and are recorded in cubic centimetres. Patients received two compressed-air baths a week.

Case No	First reading		Second reading		Third reading		Fourth reading		Fifth reading		Sixth reading		
	Before	After	Before	After	Before	After	Before	After	Before	After	Before.	During	After
1	2400	2350	2500	2450	250	500	2650	2600	2450	500	2450	2300	2300
2	2050	1850	2000	1050	2200	2100	2050	2050	—	—	2200	2100	2150
3	1800	1850	1650	1700	1750	1750	1800	1800	—	—	—	—	—
4	2050	2000	2100	2150	2050	1750	1750	1750	1850	2000	—	—	—
5	1950	2000	2150	150	1850	2050	2100	100	2050	2100	2100	2100	2150
6	2600	2650	2500	2 50	2350	2300	2800	2850	2800	2800	2900	3000	2520
7	2400	2400	2000	2600	1850	1750	2100	1700	1850	1900	2100	1950	1950
8	250	2100	2300	2170	1050	1900	1550	1000	1750	1700	1500	2050	2000
9	1200	1200	1100	1200	800	1050	1100	1100	1450	1300	1400	1250	1200

Results —Eight patients stated that while in the bath they experienced sensations described as comfort looseness, or freedom. Two patients considered that they were constantly less short of breath than they had been before the treatment was started (Nos. 1 and 6) One patient (No 3) felt no improvement at any time No definite temporary or lasting increase in the vital capacity was found On the occasion when the estimations were also made while the patients were in the compressed air bath no definite rise in the vital capacity was obtained except in the case of No 8 in whom the initial reading on that day was abnormally low

Conclusions —The estimation of the vital capacity of patients suffering from emphysema carried out before and after compressed air bath treatment does not support the view that any improvement in their condition is due to opening up of alveoli which previously were out of action

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[1] Aerotherapeutics London, 1894

(*Continued from previous page*)

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THE PHONOSTETHOGRAPH

A NEW METHOD OF RECORDING AND REPRODUCING SOUNDS HEARD ON AUSCULTATION

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THE problem of recording normal and abnormal heart sounds for the purpose of reference and study has for many years occupied the attention of physiologists and clinicians Indeed, according to Hirschfelder, the first attempts were made by Donders as long ago as 1856 Most of this pioneer work was however chiefly connected with the photographic registration of the vibrations produced by the heart sounds conducted through the chest wall In this field the brilliant work of Hürthle, Einthoven, Geluk, Holowinski and Lewis and others stand out

With the evolution and rapid improvement of the thermionic valve and electrical amplifying systems came attempts by means of modern microphones to pick up the heart sounds through the chest wall and reproduce them through loud speakers The results obtained this way varied enormously in faithfulness, volume, and background noise Such noise chiefly resulted from the hiss caused by the type of microphone used, amplified frictional noises caused by the microphone rubbing against the skin, and contraction of the intercostal muscles The first worker to employ an electrical system of auscultation of the heart successfully was R C Cabot of Massachusetts in 1923 The details of this apparatus were published in 1924 by Gamble and Replogle

During the past year or so I have been experimenting with a new electrical technique and an instrument I have designed for the purpose of auscultating the heart and chest, and recording phonographically the clinical sounds present in health and disease This apparatus is called the phonostethograph The experiments have proved very successful and the apparatus has been standardised. The record takes the form of a phonographic disc which may be replayed hundreds of times These records may be interpolated where necessary with speech explanations of the cases under observation, and at the time of recording The time taken to make a record varied from five to fifteen minutes, and it can be replayed within thirty seconds In all about 200 cases have been recorded, including normal average subjects, athletes, cases of mitral stenosis, aortic stenosis, and congenital heart disease In these records the normal and abnormal sounds may be reproduce loudly and clearly or in the attenuated for as heard with the stethoscope In cases whe the rhythm of the heart is too fast for easy timin of murmurs, it is possible to produce slow motio records for detailed analysis The normal cases wer recorded before and after exertion, and it was interesting to note the delicate changes in sound frequencie which occur in the heart sounds of individual subject after exertion, changes which were undetectabl with the stethoscope The fœtal heart at 30 week has also been recorded

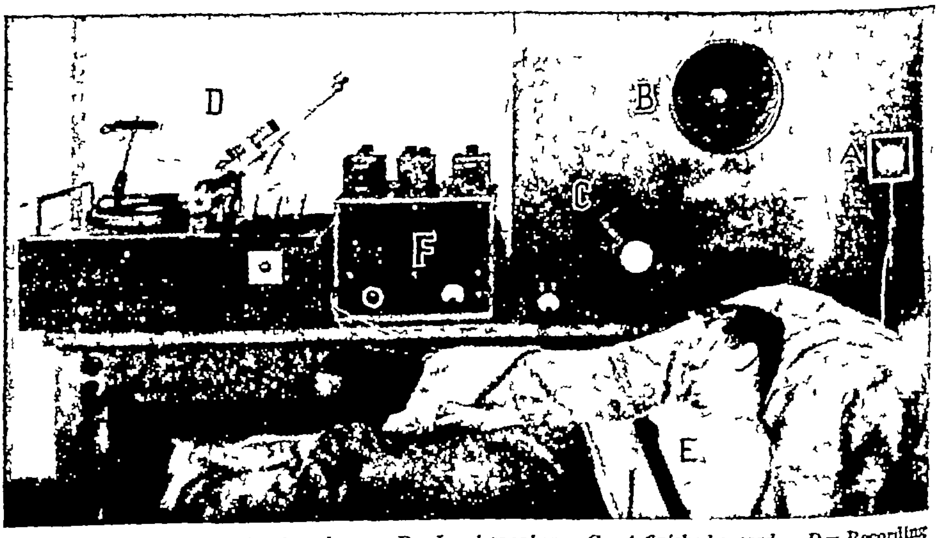
A great deal of time could be saved in teachin students to recognise various clinical abnorma sounds that occur in cardiac disease by giving the the opportunity of studying at leisure the characteristics of these cases that it is now possible t record faithfully in an amplified form In th manner after being accustomed to hear the abnorma sounds loudly and clearly reproduced they wil develop greater skill in the detection of these sounds and when confronted with the living patient the will know what to listen for, and will be able mor easily to detect any variations from the normal tha may be present In support of this argument cannot do better than quote the remarks of Cabo (1923) referring to the great advantages of electric amplification of heart and breath sounds for th purpose of clinical teaching and investigation —

> "The advantages of such an apparatus for teachin purposes are very great Chief amongst these is the simultaneous hearing of the identical sound by the instructo and students Immediate comment is possible, followe by the student's immediate attention to the feature commented on Another advantage is the economy of tim and strength for both patient and teacher"

Cabot was then referring to his electrical stethoscope introduced in 1923 and used with great succes in his clinic

THE INSTRUMENT AND ITS USE

The greatest problem which presented itself in the working out of a suitable technique that would ensure the production of good recordings was that of exclusion of interference by extraneous noise. A microphone chest-piece had to be devised which would give maximum sensitivity combined with a minimum of background hiss After experimenting



The apparatus A = Speech microphone B = Loud speaker C = A finished record D = Recording section E = Chest piece fixed to patient F = Amplifier with frequency filters above with several types of microphone it was decided to use a microphone of the carbon granule type. I devised one that embodied the necessary characteristics of lightness sensitivity and minimum hiss It was also found impracticable for the investigator to hold the microphone in position manually as the friction of his fingers against the microphone casing caused a great deal of noise which interfered with the clarity and quality of the recordings.

The phonostethograph consists of a high gain amplifier with four stages of amplification and fitted with frequency filters which enables the investigator to eliminate at will any group of sound frequencies that might interfere with the clinical sounds under observation. The recording section embodies a system of high fidelity direct recording especially constructed for this work by the Marguerite Sound System Company A moving-coil mains energised loud speaker and a pair of earphones are also incorporated in the circuit.

The technique employed is as follows —

The investigator finds the region over the heart or lung where the clinical sounds are best heard with a stethoscope Having found the spot it is marked with a skin pencil The chest-piece is then applied over the area by means of an elastic belt The necessary adjustments are made to the amplifier controls and the investigator listens in with the earphones When he has obtained the optimum degree of volume of the sounds under observation the loud-speaker is then brought into operation and the heart or breath sounds become audible loudly and clearly to all present Should it then be desired to make a permanent record of the case in question he sets the recording unit in operation and the record is made in a few minutes By means of the speech microphone he makes his personal observations on the case all of which are recorded permanently During the entire procedure the patient lies on a couch which is screened off from the apparatus

The records produced by the phonostethograph are "master discs and not ordinary gramophone records and should only be reproduced by means of a high class reproducing unit This is an important point since in order to study heart sounds in detail it is necessary to be able to hear as perfectly as possible the full range of sound frequencies generated by the heart's contraction and recorded on the master disc. Should a reproducing apparatus of inferior efficiency be used owing to inefficiency of the mechanism only a poor representation of the frequency range will be rendered audible

Compared with other methods of registering heart sounds the phonostethograph offers the great advantage of allowing the patient to breathe during the actual recording process without the record being masked by interfering breath sounds This is made possible by the use of special frequency attenuators by which these sounds can be cut out of the sound picture before it is recorded

ADVANTAGES

The phonostethograph should prove useful for teaching and for demonstrating typical cases of cardiac and pulmonary disease at clinical demonstrations and lectures with the minimum of fatigue to patients by avoiding several individual examinations It would also be useful in keeping records of cardiac cases for reference and study; and for following up the improvement or retrogression of these cases by comparing records taken at various times and under various conditions of treatment &c By the use of this technique the physician has no need to rely on his memory of the sound picture or the attempts at graphic description of sounds that only too often defy adequate description

I should like to take this opportunity of thanking Mr E M E Decottignies for his kind assistance and coöperation in the foregoing experiments

The apparatus and its recordings were demonstrated at a meeting of the Physiological Society held at Guy's Hospital on Dec. 12th The experiments were carried out in a laboratory kindly placed at my disposal by the authorities of King's College Hospital medical school.

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ENCEPHALITIS IN MEASLES

REPORT OF FIVE CASES WITH ONE DEATH AND ONE RECOVERY AFTER CONVALESCENT MEASLES ENCEPHALITIS SERUM

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More than 200 cases of encephalitis in measles have been reported. The number recorded has been greater in recent years probably because of the increasing recognition of this complication. In 1928 Ford gave an excellent summary of the cases recorded up to that time and produced a clinical classification of the types. A similar résumé has been made recently by Guibert (1930)

The complication occurs at all ages and apparently bears no relationship to the severity of the attack of measles. The time of onset is variable, but the end of the eruptive period between the 3rd and 7th day of the rash is the commonest Clinically the striking feature of the condition is its polymorphism but for practical purposes two main types may be distinguished. In the first there is evidence of a more or less profound and diffuse involvement of the nervous system—a meningo-encephalomyelitis. The various parts of the nervous system are, however affected in different degrees. As the condition evolves there is a tendency for the diffuse features to be replaced by localisation in one or more parts of the nervous system. This predominant localisation permits of the classification of the disease into its various clinical types: the meningitic the encephalitic the myelitic the multiple cerebral focal, the mental, the hemiplegic and aphasic the paraplegic the cerebellar or ataxic, &c. The initial general symptoms vary from a mild degree of apathy or irritability to a profound stupor or delirium Convulsions are common and may be severe; and general muscular rigidity is frequent. A great variety of nervous symptoms is revealed with returning consciousness In the other main group the initial diffuse symptoms are absent. The localised lesions may exist from the onset and may simulate a single focal lesion

The *cerebro spinal fluid* almost always shows some abnormality Generally the fluid is clear with some increase in pressure The slight or moderate increase in cells is due mainly to mononuclears. The protein content is also slightly or moderately increased If there is not a parallel rise in protein and cells the tendency is for the protein to be increased and the cells normal. The sugar content is uniformly normal or high, and the chlorides are normal or slightly diminished Bacteriological examination always gives a negative result Wide variations from these usual findings are, however, common in the recorded cases

On the *ætiology* of the condition two views are held. The commoner regards it as a specific encephalitis of measles, the other does not The most frequent histopathological finding is a perivascular myelin destruction suggesting a toxic rather than an inflammatory process The fatality rate is variously given as 10–25 per cent If the early dangerous period is passed the prognosis as to life is good, but permanent sequelæ are not uncommon

In *treatment* glucose, hexamine, sodium salicylate (intravenously and orally), and magnesium sulphate (orally, per rectum, intravenously, and intramuscularly) have been employed Convalescent measles serum has been used as a therapeutic measure Lowenburg and Schaller (1926) administered it intrathecally, intravenously, and intramuscularly, producing rapid improvement in the cerebro spinal fluid but with apparently little effect upon the clinical course Dufourt and Reure (1932) and Peterman and Fox (1933) also employed it but were not impressed with its value

ILLUSTRATIVE CASES

The five cases here recorded occurred during the measles epidemic in the first seven months of 1936 The points which appear of particular interest in this series are the frequency of meningeal signs and the diagnostic importance of involvement of the sphincter of the bladder One death occurred, and the post mortem findings are recorded. One case ran a course closely simulating epidemic encephalitis except that the stages of the disease evolved more rapidly This case was successfully treated by serum from a patient recovered from measles encephalitis No previous record of the employment of this particular type of serum can be traced in the literature

CASE 1—A very mild case of encephalitis in which the only symptom was retention of urine

A male aged 1 yr 7 mths

History—In patient of a general hospital since Jan 30th, 1936, for broncho pneumonia Feb 19th coryza conjunctivitis Feb 20th rash, first appearing on face

On admission (Feb 20th)—Temperature 97° F, pulse rate 132, respirations 40, severe attack of measles with gastro enteritis and broncho pneumonia

Progress—Gradual recovery from measles, broncho pneumonia, and enteritis but developed otitis media on Feb 25th On March 2nd all symptoms had subsided except that the stools were still loose Retention of urine with overflow, no abnormality in the urine Regular catheterisation began March 3rd seen by consulting surgeon who was unable to detect any surgical cause for the retention March 4th general condition good Knee jerks left present, right feeble Abdominal reflexes not elicited, pupillary reflexes sluggish, no meningeal signs March 6th radiogram of urinary tract negative Albuminuria, onset of cystitis March 30th began passing urine normally, cystitis rapidly improved April 22nd sent to convalescent hospital

The diagnosis of encephalitis was made in retrospect after the significance of retention of urine had been appreciated

CASE 2—A mild case in which the prominent features were meningeal signs and muscular weakness

A male aged 5 yrs 6 mths

History—April 8th 1936 cough, vomiting, nasal discharge, rash April 14th backache, pains in limbs and abdomen, shivering Retention of urine, constipation, weakness of legs

On admission (April 15th)—Temperature 98 2° F, pulse-rate 100, respirations 24 Thin, not very ill, general lassitude, fading morbilliform rash, slight bronchitis Cranial nerves normal, slight neck rigidity, no head retraction, slight positive Kernig on left, tendon reflexes not elicited except arm jerks, plantar responses flexor, right upper abdominal reflex present, others absent, general muscular weakness

Progress—April 16th lumbar puncture

Fluid clear under pressure	Protein 55 mg per 100 c.cm
Cells 6 per c mm	Globulin slight increase
Chlorides 770 mg per 100 c cm	Culture sterile

April 17th passed urine normally when sitting up, but unable to do so lying down Muscular weakness persists, particularly in muscles of back and legs, so that he could not walk or stand without support Neck rigidity passed off April 20th seen in consultation with Dr Macdonald Critchley who confirmed the diagnosis After this muscular power began to return and by April 27th he was able to walk by himself May 1st discharged mentally normal, muscular power apparently normal walking well, tendon reflexes present, but knee and ankle jerks sluggish No other abnormality in the central nervous system.

CASE 3—A severe case that succumbed Prominent features were the state of unconsciousness and the presence of meningeal and bladder signs

A female aged 3 yrs

History—May 8th, 1936 coryza and cough May 9th rash, which first appeared on the forehead May 10th drowsy, crying out, retention of urine May 12th much more drowsy, "sleeping" almost continuously, twitching of both arms, grinding of teeth, and rolling of the head May 13th passed urine for the first time since May 10th

On admission (May 13th)—Temperature 99 4° F, pulse rate 88, respirations 40 Measles staining of the skin Semi conscious, slight head retraction and neck rigidity bilateral positive Kernig sign, tendon jerks elicited but feeble, pupils failed to react to light, abdominal reflexes absent, plantar reflexes extensor, retention of urine with overflow

Lumbar puncture clear fluid under pressure Report (Dr W Mair)

Clear fluid	Chlorides 740 mg per 100 c.cm
Cells 20 per c mm (mononuclears)	Protein 90 mg per 100 c.cm
	Globulin increased

A *Staphylococcus albus* (contamination) was obtained from the first lumbar puncture the second was sterile

Progress—May 14th unconscious, tendon jerks absent, frequent twitchings of right arm and left side of face Continued in this state until death supervened on May 15th

Post mortem examination—We are indebted to Dr A B Bratton for the following summary of the necropsy carried out by him —

Microscopic foci of collapse in congested lungs Cloudy swelling of myocardium liver, and kidneys Slight excess of leucocytes in œdematous spleen Nodule of ectopic cortex in capsule of suprarenal body Congestion of pancreas Dilatation and congestion of urinary bladder No abnormality in stomach, intestines, uterus, or ovaries Middle ears clean

To the naked eye the brain spinal cord, and their meninges appeared congested Sections were taken from various parts of the cerebral cortex and white matter and from the basal ganglia mid brain, pons, medulla and cervical, thoracic and lumbar cord In all sections some degree of demyelination is present, for the most part this is inconspicuous, consisting of a few very narrow perivascular zones rather more frequent in the white matter than in the grey there is also a narrow subependymal zone over the left optic thalamus In the sixth thoracic segment however there is an area (0 1 by 0 05 cm) involving the central parts of both posterior columns astride the median raphe

In all sections perivascular 'cuffing' is also seen. The infiltration consists of lymphocytes, plasmacytoid cells, histiocytes, and rarely a few neutrophil leucocytes, and is usually sparse there being only a single row of cells, often incomplete but in the basal ganglia mid brain, pons and medulla there are occasionally as many as four rows Fat phagocytes also occur in the infiltration especially where there is a zone of demyelination around the affected vessel, and a few are present in other demyelinated areas There are also a few small hæmorrhages associated with the cuffing" The cuffed vessels are few and are situated more often in the white matter than in the grey but there appears to be no constant relation between the demyelination and cuffing: any one vessel may show both changes together or either separately

A demyelinating encephalitis is present in which the demyelination is less conspicuous and perivascular infiltration more conspicuous than usually described.

CASE 4—A mild case the prominent features of which were involuntary movements of the head and grimacing.

A female aged 1 yr 4 mths

History—June 11th 1936: cough coryza discharging eyes June 12th: rash which first appeared on face

On admission (June 12th)—Temperature 99 F pulse-rate 104 respirations 24 Typical attack of measles of moderate severity

Progress—June 17th symptoms of measles largely subsided Child irritable June 30th: temperature 105° F; attack of enteritis July 2nd involuntary movements of face and head grimacing; smiling at apparently nothing in particular as she appeared unaware of her environment; twitching of left side of face; head nodding and other purposeless movements. No evidence of tetany no meningeal signs Examination of central nervous system negative except that right knee-jerk was not elicited and left knee-jerk was feeble Still irritable July 4th parents visited the patient and thought she had a blank look and did not recognise them Movements continued rather intermittently Abdominal reflexes and tendon jerks not elicited Plantar responses doubtful July 5th: little more irritable Doubtful rigidity of neck. July 10th improving still grimacing but not so frequently Tendon reflexes still absent but abdominals now brisk and equal No meningeal signs Indefinite weakness of left leg Thereafter improvement continued slowly and after July 31st no movements were seen August 14th: apparently mentally normal; says "mummie and daddy" Stands by herself and walks around cot All tendon reflexes present but ankle jerks feeble; abdominal reflexes present and equal General condition good. August 20th: discharged.

CASE 5—A severe case successfully treated with convalescent measles-encephalitis serum The striking feature was the resemblance of the disease to epidemic encephalitis

A female aged 4 yrs 6 mths

History—July 5th 1936 cough July 6th: rhinorrhœa rash, which first appeared on the face July 9th: vomiting

On admission (July 10th)—Temperature 101 8 F pulse-rate 152 respirations 56 Quite ill; feverish and restless breathing distressed marked coryza; râles scattered over lungs; general morbilliform rash; Koplik spots in profusion

Progress—July 11th vacant look; slight internal squint; incontinence of urine; obstinate constipation; temperature subsiding July 12th: indefinite rigidity of neck; no retraction; Kernig sign not elicited deep jerks eye reflexes, and superficial reflexes present Screaming attacks particularly when disturbed does not talk refuses food; nasal feeding begun July 15th definite signs in the nervous system neck rigidity; positive Kernig; left knee jerk and both ankle-jerks absent abdominal reflexes absent; plantar reflexes doubtfully extensor; pupils equal react to light and accommodation vacant expression; doubtful weakness of the right side of face doubly incontinent; temperature rising

Lumbar puncture showed clear fluid under moderate pressure Report (Dr W Mair):

Appearance clear
Cells less than 3 per c.cm
Chlorides: 40 mg per 100 c cm
Protein: 40 mg per 100 c cm
Globulin: slight increase

Cultures: sterile
Wassermann and Kahn: negative
Colloidal gold 2 1000000

July 17th: much more lethargic almost unconscious All deep jerks and abdominal reflexes absent Temperature 100 F general condition much worse prognosis considered almost hopeless

Serum treatment—At this stage Dr W Gunn suggested the administration of serum from a patient convalescent from measles encephalitis 20 c cm were given intravenously and produced immediate benefit The downward progress was arrested and within 24 hours there was evidence of definite improvement Consciousness returned sufficiently to allow the patient to answer simple questions; the temperature began to subside she started taking fluids by mouth and the neurological signs improved July 19th: neck rigidity less pronounced; Kernig sign almost disappeared abdominal reflexes present left knee-jerk present drowsiness largely gone Thereafter her condition steadily improved and on July 22nd no abnormality could be detected in the central nervous system She was talking and feeding herself July 23rd a considerable change appeared in her demeanour She was "naughty screaming at the top of her voice constantly trying to get out of bed and tending to be vicious and destructive After one meal she threw her plate across the ward A fine tremor of the parkinsonian type appeared This changed manner persisted for a week during which time she slept badly and required hypnotics She then improved fairly rapidly and by August 2nd was apparently normal, tremor having disappeared She was discharged on August 22nd mentally normal, well behaved with normal speech regular action of the bowels and no abnormality of the central nervous system

DISCUSSION

Of the cases in this series all showed involvement of the sphincter of the bladder Definite meningeal signs were present in all except Cases 1 and 4 In Cases 3 4 and 5 mental symptoms or interference with consciousness occurred associated with involuntary muscular movements. Case 5 was striking in its resemblance to epidemic encephalitis and its rapid response to convalescent measles encephalitis serum was most encouraging

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TUMOUR GROWTH IN HYPOPHYSEAL DWARFISM

BY PROF BERNHARD ZONDEK, M.D

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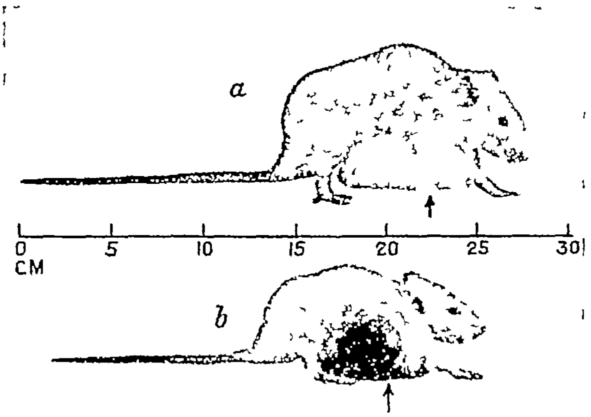
As reported in previous papers (Zondek 1936) it is possible to produce dwarfism experimentally in rats by the prolonged administration of follicular hormone which prevents the growth hormone elaborated in the anterior pituitary from entering the blood stream The absence of the growth hormone is shown by the fact that the rats will grow more slowly and cease growth earlier than normally While the control animals are 16 5 cm long and weigh 170 g on an average the dwarfs reach a length of only 14 4 cm and a weight of 90–100 g The slackening of growth is proportionate affecting equally all parts of the body—the head the bones the tail and the internal organs That the dwarfing is hypophyseal in origin may be deduced from the finding that Evans's pituitary growth hormone will stimulate the dwarf animals to grow again

TUMOURS IN DWARF RATS

It seemed interesting to investigate the development of malignant tumours in dwarf animals, since it has been suggested that this is influenced by the anterior pituitary Ball and Samuels (1932) observed a less pronounced growth of transplanted mammary carcinoma in hypophysectomised albino rats Reiss, Druckrey, and Hochwald (1933) have stated that if a rat weighing 60–120 g is inoculated with Jensen sarcoma two or three weeks after hypophysectomy, the tumour will grow to the size of a pea, or at most to that of a cherry, and will then undergo complete involution The greater the time since hypophysectomy, the shorter will be the duration of life for the tumour This effect is missed even if the slightest remnant of anterior pituitary tissue is left during the extirpation, which shows that it is the anterior lobe that inhibits the growth of the tumour This is also proved by the fact that the growth inhibition is counteracted by giving Evans's growth hormone



Eunuchoid dwarf rat (*b*) in which dwarfing was produced by 300,000 M U of dimenformon given from the age of one month and control rat (*a*) Both were males aged 6 months and are shown five weeks after the implantation of a benzpyrene sarcoma

If, therefore, the growth of malignant tumours depends upon the growth hormone of the anterior pituitary, one would expect that malignant tumours would not grow—or at least would grow much more slowly—in our hypophyseal dwarf rats than in the controls For the experimental tumour I used the benzpyrene sarcoma described by Kennaway and Cook et al (1935) I did not use, however, the primary tumours obtained by prolonged subcutaneous injection of benzpyrene, but those that had already gone through several passages on transplantation, all these tumours "took"[1]

For the first experiments a tumour material was used that had gone through six passages Pieces of the tumour, the size of a small pea were implanted into the left axilla of the rat As experimental animals we chose male rats that had each received twice a week 5000 M U (mouse units) of Dimenformon,[2] diluted in 0 2 c cm of oil, for at least five months They were typical dwarf males, 14 4 cm long and weighing 100 g The control animals were each injected over the same period twice a week with 0 2 c cm of olive oil They were 16 5 cm long and weighed 170 g After the tumour implantation the dwarf rats were further treated with dimenformon, the control animals still receiving olive oil

A tumour the size of a bean was palpable ten days after the implantation in both the control and the experimental animals The tumours grew rapidly, and three weeks after implantation they had already reached the size of a pigeon's egg At five weeks the tumours were enormous compared with the size of the rat, being about as big as a hen's egg The important fact is that the growth of the tumour was *just as rapid in the dwarf animals* as in the controls (see Figure)

Eight months later I carried out the same experiments in female animals, this time using a tumour material that had gone through twenty passages Here again the tumour "took" in every animal. The result was the same as in the first series The tumours grew extraordinarily rapidly and there was no difference between the controls and the dwarfs

These experiments prove that the growth of the tumour in hypophyseal dwarf animals is the same as in normal animals Although in the dwarf rats the growth hormone is out of action, and the growth of the body and of internal organs is accordingly inhibited, its absence does not seem to affect the development of implanted malignant tumours

There is, however, a characteristic difference between a hypophysectomised animal and our experimental animal. In the former, besides the growth hormone, all the hormones elaborated in the anterior lobe are absent In my experimental animals the growth hormone is probably being produced in the anterior lobe, but its secretion into the blood stream is being prevented. In my animals I block certain hormones, and among them the growth hormone Perhaps the hypophysectomised animal differs in its behaviour towards the tumour growth from one in which the pituitary is merely blocked by follicular hormone, and possibly my results, so contrary to those hitherto reported, may be explained by this difference This, however, does not seem to me to be very probable If, indeed, the growth hormone is one, or the only, stimulating factor in the growth of malignant tumours, one would expect that in our dwarf animals the malignant tumours would not grow at all, or would at least grow much more slowly than in the controls Since, however, the development of the tumours in our dwarf animals has not been inhibited at all, I do not believe that the anterior pituitary regulates the growth of malignant tumours

SUMMARY

1 Prolonged treatment with follicular hormone impairs the function of the growth hormone of the anterior pituitary, and hence results in hypophyseal dwarfism The release of the growth hormone into the blood stream is inhibited by follicular hormone, and this reduces the growth of the whole body, including the internal organs

2 When malignant tumours are implanted into hypophyseal dwarf rats—I used a sarcoma caused by benzpyrene which had gone through several passages—the tumours grow as fast in the dwarfs as in the control animals The absence of growth hormone in the dwarf rats consequently does not impede the growth of malignant tumours

3 From this it follows that the growth hormone of the anterior pituitary has no important effect upon the growth of malignant tumours

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[1] For the supply of the tumour material I am indebted to Prof L Halberstaedter of the cancer research institute in the Hebrew University, Jerusalem

[2] I am indebted to Dr Marion Tausk of Messrs Organon (Oss Holland) for supplying dimenformon

SOLITARY METASTASIS IN SPLEEN
IN CARCINOMA SIMPLEX OF RIGHT BREAST
WITH EXTENSIVE LOCAL SPREAD

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Although metastatic carcinoma of the spleen is by no means rare, it is unusual to find it in the absence of deposits in other abdominal viscera. The following case where the primary growth was in the right breast, is recorded because apart from local spread the only visceral metastasis was in the spleen.

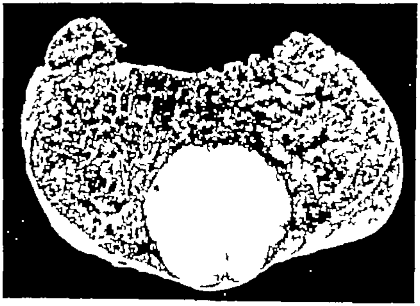
CASE REPORT

A female aged 66 was admitted to Napsbury Hospital on Sept 24th 1926 under certificate with the diagnosis of involutional melancholia She was depressed agitated, and distressed, refusing food and insisting that her bowels were blocked and would never act again The illness was gradual in onset without discoverable cause, and there had been no previous *symptoms* of mental disorder Physically she was ill nourished but no evidence of organic disease could be found Twenty years previously she had had an operation performed for a 'fibroid' uterus She had one son aged 37

During her stay in hospital she showed no change in her condition until March 10th 1936 when at the age of 76 it was noticed that she had swollen glands on the right side of the neck A few days later the left cervical lymph nodes were enlarged and the voice became husky Further examination revealed enlarged lymph nodes in the right supraclavicular region and axilla The right breast was fuller than the left and it contained a diffuse mass firm in consistency but not hard There was no anæmia On April 13th she complained of pain and tenderness over the right clavicle and of swelling of the right arm There were dilated veins over the clavicle and massive œdema of the arm with a temperature of 101 F Two days later she died

Autopsy—The body was that of an ill nourished elderly female of sparse build with massive œdema of the right arm Noticeable fullness of right breast the areola appearing to be pushed forward while the nipple was a little retracted Deposits of growth were visible in lines which could be felt as cord like structures radiating from the breast in all directions and particularly towards the clavicle On section the tumour was softer than the usual carcinoma and slightly pink in colour with a few punctate hæmorrhages It was adherent to the underlying muscle The cervical lymph nodes were greatly swollen and contained a softish pink growth undergoing necrosis in the centre The thyroid was enlarged and contained a deposit of growth on the right side and a smaller one on the left The larynx and trachea were not compressed The lungs pleuræ and bronchial lymph nodes were carefully searched for secondary tumours but no naked-eye deposits were found The heart was small and flabby and the great vessels showed only a little atheroma Examination of the abdominal cavity revealed one large metastasis in the spleen lying deep in the parenchyma towards the capsule and opposite the hilum There was a distinct bulge and stretching of the capsule of the spleen corresponding to the underlying tumour but at no point did they meet being separated always by a strip of splenic parenchyma The spleen weighed 205 grammes ; when cut longitudinally the tumour was found to be roughly spherical in shape with a diameter varying from 38 to 42 mm (see Figure) The gall bladder contained a few small stones. The uterus was small and atrophic The ovaries could not be identified (they were probably removed at operation) The peritoneum liver pancreas, kidneys suprarenals abdominal lymph nodes mesentery stomach and intestines were carefully searched but no other metastasis could be found The brain weighed 1120 grammes No secondary tumours could be found The spinal cord and skeleton were not examined for metastases

Histological appearances—Examination of the growth in the breast revealed a highly cellular and undifferentiated type of tumour the cells having scanty cytoplasm and varying considerably in size and shape with frequent mitotic figures The arrangement of the cells was so irregular that there was not even a suggestion of alveolar formation. There were numerous thin walled vascular channels, in the lumen of some of which could be seen tumour cells, together with red corpuscles but there was little in the way of stroma. Parts of the growth were seen invading the adjacent glandular and adipose tissues permeating between the cells of the latter and carrying with them thin walled vessels and scanty stroma Some chronic inflammatory reaction could be seen in outlying parts



The splenic metastasis.

The appearance of the growth in the spleen was similar to that of the one in the breast, except that there was closer packing of the malignant cells The advancing edge showed definite infiltration although in at least one part there was an appearance of pseudo-capsule formation. In one place there was a colony of malignant cells at some distance from the advancing edge Examination of parts of the spleen well removed from the tumour did not reveal any evidence of diffuse involvement with malignant cells. The spleen was of the senile type comparatively acellular with thickened trabeculæ and extensive hyaline change in the walls of the vessels

The histological appearances were considered to be those of a carcinoma simplex.

COMMENTARY

Carcinoma was until recently thought to metastasise to the spleen only very rarely Recent statistical inquiries however have shown that this is not the case and that splenic deposits are not infrequent Warren Shields and Davis (1934) for instance in a series of 1140 consecutive cases of carcinoma of all types found naked eye metastases in the spleen in 1 9 per cent. they occurred most frequently when the primary growth was in the lung (23 per cent of 13 cases) or in the breast (15 per cent of 193 cases) The variety of carcinoma which they found most frequently metastasised to the spleen was the rapidly growing and undifferentiated carcinoma simplex (of 102 cases of carcinoma simplex 20 had metastases in the spleen 18 of which had their origin in the breast) The growth presumably reaches the spleen by way of the blood stream because lymphatic vessels are said not to penetrate the parenchyma and they are infrequent in the capsule

It is, therefore, the relatively uncommon and undifferentiated varieties of carcinoma that may be expected to be found in distant organs and this is borne out by facts In this connexion, it is interesting to note that Krumbhaar (1926) found metastatic sarcoma to form a high proportion of spleen tumours In that they are soft rapidly growing tumours with a capacity for penetrating into the systemic and pulmonary circulations, sarcoma and carcinoma simplex may be considered very similar in their behaviour The more common type of carcinoma, for example the scirrhous, spreads by means of lymphatics and only rarely does it invade the blood stream and give rise to distant metastases (Sampson Handley) This then is one reason why secondary carcinoma of the spleen is uncommon.

Another factor appears to be the mobility of the spleen Kettle (1912) has suggested that, for this reason, tumour colonies are prevented from growing in the spleen, for it shares with other mobile structures —heart, striated muscle, and bowel—the distinction of being most rarely affected The age of this patient was 76 Possibly the interstitial changes which occur in senile spleens and consequent diminution of mobility account for the greater incidence of metastatic tumour in elderly as against younger persons

Warren Shields and Davis, however, noted that in every case where the spleen was involved there were also metastases in three or more organs In none was the spleen or spleen and lymphatic nodes affected alone The case described, therefore, is unusual in that the splenic tumour is the only abdominal metastasis and the only one which cannot be readily explained on the basis of a lymphatic spread.

The presence of this large growth in the spleen is further evidence against the view now partly discredited, but still upheld in part by Krumbhaar in 1927, that the spleen exerts a "specific antagonistic action" against carcinoma cells a view in favour of which there has been some experimental work.

SUMMARY AND CONCLUSIONS

1 A case is described of carcinoma simplex of the right breast with a large secondary deposit in the spleen No other abdominal metastases were found

2 In order for a carcinoma mammæ to metastasise to the spleen, a blood stream invasion is necessary This is most likely to occur with a carcinoma simplex

3 Granted a blood stream invasion, a splenic metastasis is most likely to grow when that organ is relatively immobile, as in the spleen of advancing years

4 The presence of a large metastasis in the spleen and none elsewhere in the abdominal cavity is further evidence against the now partly discredited view of a "specific antagonistic action" towards carcinoma cells on the part of the spleen

I wish to thank Dr A O'Neill, medical superintendent of Napsbury Hospital, for permission to publish this case

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MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF THERAPEUTICS AND PHARMACOLOGY

AT a meeting of this section held on Nov 9th, Dr D C HARE, the president in the chair, a joint contribution by Prof E C DODDS and Dr R L NOBLE on the relation between the

Pituitary and Gastric Secretion

was communicated by Dr Noble He described the severe hæmorrhagic lesions produced in the stomach of some animals after injection of posterior pituitary extract In the rabbit they could be produced unfailingly, and the typical appearances were seen in the upper area of the stomach, corresponding to the distribution of the oxyntic cells If the stomach contents were neutralised before the injection was given the effects did not occur In their experiments Prof Dodds and Dr Noble had collected specimens of gastric juice from cats and rabbits through gastric fistulæ which had usually been established before and allowed to heal completely The injection of the extract of the posterior lobe of the pituitary was found to inhibit the secretion of gastric juice induced by various stimuli. The most powerful stimulus to gastric secretion was that produced by injection of histamine, one milligramme producing in a rabbit a profuse flow after half an hour lasting about three hours The injection of posterior pituitary extract B P 15 minutes before histamine completely inhibited the secretion for even six or more hours The excretion of neutral red was similarly inhibited, if given with histamine it was usually excreted with the gastric juice after half an hour The secretions produced by sham feeding and pilocarpine were also inhibited by pituitary injection Control extracts of tissues other than the posterior pituitary did not affect the secretion, and the inhibition was only produced by the vasopressive principle and not by the oxytocic principle of the posterior lobe extracts In cats the response was the same whether the animal was unanæsthetised or under Nembutal. In searching for a more physiological stimulus than histamine the effect of insulin on gastric secretion had been observed A subcutaneous injection of two units in a cat caused a definite secretion which was not so profuse and was of shorter duration than that found after histamine The acid values were slightly lower Insulin, however, increased all components of the juice, and in contrast to histamine caused a marked increase in peptic activity All anæsthetics abolished that action of the insulin The response appeared to be initiated but not maintained by the hypoglycæmia, the fact that the gastric stimulation by insulin was abolished by section of the vagi or decerebration showed that the mechanism involved was nervous If the animal were given a previous injection of pituitary extract and then tested with insulin no secretory response occurred, and control tests showed that this inhibition was not due to the antagonistic action of insulin and pituitary extracts on the blood sugar

From these results Prof Dodds and Dr Noble had concluded that a substance contained in the vasopressive fraction of posterior pituitary extracts abolished all types of gastric secretion which might occur in a normal animal. The action was found to affect the volume of gastric juice and not primarily the acidity but intravenous injections might prevent the formation of any gastric juice and a temporary condition of achlorhydria might ensue

Prof. Dodds was anxious to know whether any other agent had been found to inhibit the secretion of gastric juice completely

Dr Lucy Wills wondered whether the effect obtained by pituitary was related to the reduced acidity found in hyperthyroidism and asked if any effects had been produced by giving thyroid extract.—Prof Dodds answered that he had obtained none in his experiments

Dr R D Lawrence asked whether the stimulation of secretion could be obtained with insulin apart from hypoglycæmia —Dr Noble said it had only occurred with hypoglycæmia

Liver and Yeast in Macrocytic Anæmias

Dr Lucy Wills then gave a communication entitled Extracts of Liver and Yeast their Varying Efficiency in the Treatment of Macrocytic Anæmias She explained that two macrocytic anæmias pernicious anæmia and tropical (or nutritional) macrocytic anæmia were cured by whole liver or crude liver extracts Certain yeast extracts were effective in curing the tropical anæmia but would only cure pernicious anæmia after admixture with normal gastric juice Castle s theory of the formation of the liver principle by the interaction of an extrinsic and intrinsic factor had been thought to explain the ætiology of these two anæmias There was much evidence to suggest that the tropical anæmia was a deficiency disease and there was no suggestion of faulty gastric function As Marmite (autolysed yeast) a rich source of the extrinsic factor was curative alone the deficiency in diet had been assumed to be the extrinsic factor The rhesus monkey when fed on a diet based on one in common use among sufferers from the tropical anæmia, developed a macrocytic anæmia thought to be the animal counterpart of the tropical disease These two diseases, in man and monkey differed from pernicious anæmia proper in showing no increase in the bilirubin content of the blood less conspicuous variability in the size of the cells, and the absence of natural remissions These differences were difficult to explain if the two conditions were due to a lack of the one and same liver principle but for lack of any evidence of any other factor Castle s theory had been accepted as affording the best working hypothesis

Dr Wills, with Mr P W Clutterbuck D Sc and Dr Barbara Evans (see The Lancet Feb 6th 1937 p 311) had studied the nutritional macrocytic anæmia in monkeys and cases of pernicious anæmia They had found that the anæmic animals responded well to treatment with either liver extract or crude yeast extracts but that the purified form of the liver factor Anahæmin which was curative in true pernicious anæmia was absolutely inactive even in enormous doses in the macrocytic anæmia of the monkeys Two fractions one soluble and the other insoluble in ammonium sulphate had been prepared from yeast filtrates and the liver extract Campolon The insoluble fraction from campolon which would have contained any anahæmin present had induced immediate remission in two cases of pernicious anæmia but was completely inactive in monkeys The same monkeys however had responded to administration of the soluble fraction Similarly anæmic monkeys had failed to respond to the insoluble fraction from the yeast extract but responded to treatment with the soluble fraction

There was some evidence that the e two factors were both necessary for hæmopoiesis in man and rhesus monkeys but that in the production and cure of the nutritional anæmia of the monkey the soluble fraction was mainly concerned. Its action in tropical macrocytic anæmia was being investigated.

DISCUSSION

Dr Hamilton Fairley said that the macrocytic anæmias played a large part in tropical practice. Three types were thought to exist, the tropical macrocytic anæmia the anæmia of tropical sprue, and an anæmia apparently associated with malarial infection this last was probably tropical macrocytic anæmia with malaria superimposed Tropical macrocytic anæmia had been thought to occur in India, Africa and China He had recently been investigating blackwater fever in Macedonia and had seen two cases of anæmia with malarial infection in a neighbouring ward, which he considered were probably macrocytic anæmia. If that were so that condition must be very common in the Balkans and right through Europe He asked Dr Wills about her experience with the anæmia in monkeys There was, he said a need for much more work on tropical anæmia

Prof F Pyman inquired the technique of separating the soluble and insoluble fractions from ammonium sulphate

Prof. L J Witts asked whether Dr Wills s soluble fraction was curative in pernicious anæmia

Dr Janet Vaughan said she preferred to use the less pure preparations of liver extract. Her experience was that she had had to give relatively more anahæmin than of the cruder extracts She considered that the preparation of anahæmin marked a great scientific advance but doubted whether it was of such help to therapy Jacobsen Fiske and Subbarow had isolated three principles from liver suggesting that the whole problem was more complicated than had been thought From that point of view anahæmin probably did not contain all the principles involved and the cruder extracts would be better to use

Prof Dodds asked whether the very pure preparations were excreted very rapidly He mentioned the greater effectiveness of œstrin in oily solution over that in crystalline form and wondered whether a parallel were to be found in pure liver preparations

Dr S W F Underhill said that theoretically the cruder preparations should act more slowly One c.cm. of anahæmin had been found to maintain cases of pernicious anæmia in good health when given at six or even eight weekly intervals There must therefore be some power of storage There was no satisfactory animal test for the potency of the cruder liver extracts The purer extract showed well marked constancy in melting point and rotation but there was no reliable chemical or physical test for the cruder extracts

Dr Wills in reply said that she too had had difficulty in keeping monkeys alive with a lower red cell count than three million. That level was sufficient for experimental purposes The results from the soluble fraction tried in one case of pernicious anæmia had been inconclusive She and Dr Clutterbuck had not yet prepared crystalline material from their fractions

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Cumberland Infirmary Carlisle.—A scheme of extensions to cost about £10 000 was submitted at the annual meeting of this hospital Plans and estimates have been forwarded to the Commissioner for the Special Areas asking for an indication of the amount of grant forthcoming in view of the fact that a great deal of work will be brought to the infirmary from the distressed areas of the county

ALCOHOL AND THE MOTORIST

A MOCK TRIAL

THE Fellowship of Medicine staged an amusing and instructive Mock Trial in the Barnes Hall of the Royal Society of Medicine on March 11th

The judge was Mr W H Cartwright Sharp, K C, and the jury was a decidedly special one, for it contained, among other distinguished persons, three Members of Parliament, a professor of physiology, and a well known woman novelist

CASE FOR THE PROSECUTION

A Mr Samuel Johnson, a middle aged man with a genial and somewhat detached attitude to life, played with great spirit by Mr W W Anderson, was indicted for an infringement of the Road Traffic Act, 1930, s 15 being under the influence of drink to such an extent as to be incapable of properly controlling his motor car

Mr W A L Raeburn, counsel for the prosecution, after explaining the nature of the charge and the evidence, called Miss Gladys Smith, a "travelling advertisement for a firm of beauty specialists" She testified that, driving behind the defendant, she saw him fail to start at a green light, drive suddenly across the crossing on the succeeding amber light, and proceed quickly up the steep hill opposite, zig zagging from side to side, she followed him to where he had stopped his car on the off side of the road and found him leaning back in a semi conscious state

P C James Maclean (Mr Keith Attenborough) said that at 10 26 P M he had been summoned by Miss Smith and had found the defendant with his head resting on his arms across the steering wheel, had smelt alcohol in his breath and, suspecting him of being drunk, had taken him to the police station

Dr P B Spurgin, police surgeon, Blank Division, said that he saw the defendant at 10 53 P M The defendant did not get up when he came into the room but consented to be examined. He swayed gently from side to side, said that a policeman had brought him there on foot, and then corrected himself and stated that he had been driven to the station in a car He had been uncertain about the starting point and destination of his journey He was rather flushed and his skin was slightly moist, his eyelids were heavy, and his appearance was sleepy His tongue was slightly furred and his breath smelt of alcohol, but not strongly His pupils were rather dilated and their reaction to light very considerably delayed In trying to touch the tip of his nose he twice missed His knee jerks were exaggerated until he realised that they were being tested. He swayed on standing with the eyes shut and the feet toe to heel. His pulse was rather full and the rate was 126 to the minute Dr Spurgin had concluded that he was under the influence of alcohol to an extent which made him incapable of properly controlling his car, and had told him so, and that he could send for his own doctor if he wished

The defendant had sent for Dr T R Snelling, who had arrived at 11 15 P M and examined him in Dr Spurgin's presence Dr Snelling had taken two samples of blood in the usual pipettes and had handed one to Dr Spurgin

Mr Laurence Vine, who defended Mr Johnson, cross examined Dr Spurgin, who replied that he would not have certified Mr Johnson as drunk *in charge* under Section 40 of the Criminal Justice Act, 1925, but that he was under the influence of drink within the Road Traffic Act, 1930 He was not so drunk that he could not give a valid consent to the examination. Dr Spurgin agreed that every one of the clinical symptoms, individually, might be due to other causes, and agreed with the finding of the special committee of the British Medical Association that there was no single symptom due to the consumption of alcoholic liquor which might not also be *assigned to some other pathological condition* He had not asked the defendant if he suffered from any other condition, though it was usually his practice to do so, and he would have done so to a private patient If the defendant had taken a dose of insulin two or three hours before the reaction would not necessarily be still apparent, and the symptoms could not have been caused by a dose of insulin *taken even an hour before* A diabetic, even though he had taken nothing to drink, could show these symptoms, except the sluggish reaction to light, for this was a particularly important pathognomonic sign of alcoholism In an alcoholic patient the pupils contracted under light but took a long time to dilate again when the stimulus was removed A diabetic might have a perfectly normal reaction Moreover, the diabetic usually *had a dry, red tongue* Furring of the tongue might, however, be caused by gastric disturbance, and failure to touch the tip of the nose by any one of several conditions He agreed that Mr Johnson's was a borderline case A disorder of general health was a possible explanation of the clinical picture He could not make any attempt to apportion the symptoms between alcohol and other causes

Dr H K V Soltau, expert for the prosecution, said that he had done the Widmark test on a sample of the defendant's blood He had devoted himself to this test for two years and had done several hundred estimations Relating the results to physical conditions, he said that when the blood content was below 80 mg per 100 g, most authorities agreed that the person was not intoxicated, but if the content was higher his performance of psychological tests and his control of a car in a difficult situation might be affected With a content of above 100 mg per 100 g a normal man was not capable of controlling a car Men who could drink an abnormal quantity of alcohol were usually found not to have a very high blood alcohol content A man who showed 130 mg would not be fit to meet an emergency The present specimen had contained 150 mg

In cross examination by Mr Vine, he said he would convict any man on a reading of 150 mg without any clinical tests or other evidence He admitted that acetone gave the same reaction as alcohol and might account for 25 mg in the estimation Assuming the alcoholic content to be only 125 mg, he had never yet met a man who was *not affected* by that amount A recent anæsthetic could have raised the apparent blood alcohol but not by more than 10 mg

Re examined by Mr Raeburn, he said that the highest acetone content likely to be found in a diabetic pursuing his ordinary life was 25 mg, and that 35 mg was the ordinary maximum for a non comatose patient The peak of the blood alcohol content was reached between *half an hour and one and a half hours* after drinking, and sooner if food had been taken The content declined at the rate of 20 mg per hour

This concluded the case for the prosecution, and after Mr Vine had submitted, unsuccessfully, that there was no evidence to go to the jury, he placed the defendant in the box

CASE FOR THE DEFENDANT

Mr Johnson said he was a commercial traveller He did not remember having any difficulty in controlling his car he had not zigzagged particularly; he had not swayed more than the policeman had he had not stood up when the police-surgeon had come into the room because he was a Communist. He had not been interested in the tests He suffered from diabetes and had taken a dose of insulin at about 7 o clock. He had not told the police-surgeon this Cross-examined he said that he had taken a pint and a half of beer the last glass being about 7 o clock He had only had a sandwich or two and had left the public house at 8 o clock A tooth had started to ache violently and he had gone to a dentist and had it out at 9 30 P.M. after the gum had been sprayed with ethyl chloride. He had taken no alcohol afterwards

Dr Snelling giving evidence for the defence said that the defendant was his patient and was a diabetic. On examination at the police station he had walked well his pupils were dilated and reacted slowly to light he answered questions steadily and sensibly picked up coins accurately and counted them correctly His speech was normal, face flushed knee-jerks normal he could touch the tip of his nose at the second attempt His pulse rate was 90 Dr Snelling had concluded he was suffering from an overdose of insulin but was fit to drive Cross examined by Mr Raeburn Dr Snelling said that the effect of insulin would not have worn off by 7 30 P.M. but that it would take four hours to reach its peak effect. The maximum overdose short of one producing collapse, after a few sandwiches and three glasses of beer would be between 25 and 30 units

Re-examined he agreed with the words of Conybeare on Diabetes and Insulin p 45 that hypoglycæmic reactions were most likely to take place between 2 and 4 hours after the injection of insulin but were sometimes strangely delayed. In answer to the judge, he said that the abnormal reaction to light might have been due to insulin

Sir James Purves-Stewart said that many of the symptoms were consistent with alcohol poisoning but that every one of them might be due to other conditions, such as emotional shock excitement on being taken to a police station exhaustion belladonna poisoning and carbon monoxide poisoning An overdose of insulin could produce all the defendant s symptoms A patient with over 400 mg of blood alcohol per 100 g would be comatose over 350 mg. stuporous; over 200 mg. hopelessly drunk With a content of 180 mg 80 per cent of persons showed moderate intoxication and 20 per cent. no signs with over 160 mg. 60 per cent of persons showed signs of intoxication and with 100 mg. only 33 per cent Fallacies of the Widmark test were that other volatile bodies—e g acetone—gave the same reaction as alcohol up to 20 or 30 mg Insulin poisoning was common in a patient who had not taken a proper meal. The Widmark test was inconclusive in this case Cross-examined he said that the effects of insulin in the present case would be apparent at 10 30 P.M. Insulin prevented the formation of more acetone but would not reduce the existing content Three glasses of beer taken at 7 P.M could account for a blood alcohol content of 150 mg at 10 30 P.M

Re-examined he agreed that acetone exaggerated the value of the alcohol in the test

ADDRESSES TO THE JURY: ACQUITTAL

Counsel then addressed the jury Mr Vine submitted strongly that they could not convict on the evidence of a test which was so compromised by fallacies and that, as this was admittedly a border line case the defendant must have the benefit of the very substantial doubt. Mr Raeburn pointed out that there was no evidence of the amount of insulin the defendant had taken and consequently no evidence of an overdose It was absurd to say that three glasses of beer would have caused such a high blood-alcohol the defendant must have drunk more liquor during the evening The judge summed up strongly in the prisoner s favour and the jury acquitted him.

The trial showed signs of careful preparation and fully illustrated the point which the Fellowship desired to make the ambiguity introduced into evidence based on the Widmark test when the defendant is a diabetic and has recently taken insulin without an adequate supply of carbohydrate, or has recently had an anæsthetic

LEAGUE OF NATIONS AND NUTRITION

AT the Lister Institute on March 10th Prof E J Bigwood of the faculty of medicine University of Brussels and Dr Hazel Stiebeling senior food economist Bureau of Home Economics U S Department of Agriculture spoke on two aspects of the nutritional work carried out in connexion with the health section of the League of Nations

Dr BIGWOOD described the work of the conference of experts meeting in Geneva last December to discuss methods of assessing the nutritional state of children and adolescents The difficulty was stressed of finding objective tests, other than simple physical measurements of which the value was very limited. These, which include height and weight in relation to age and sex physical appearance (slender medium or stocky type) firmness and elasticity of skin state of teeth state of muscles and signs of abnormal fatigue were however considered useful methods for study of large numbers of children and for periodical examinations It was recommended that small groups of children should undergo a more elaborate examination which should include inquiries into the diet family history a complete medical examination special tests of blood for hæmoglobin and protein-content together with some of the tests recently devised to reveal slight and incipient stages of vitamin deficiency Such were: for vitamin A deficiency the dysadaptation test (visual acuity in semi-darkness) for vitamin C vascular fragility and ascorbic acid saturation tests, and for vitamin D X ray examination of epiphyses of bones and phosphatase content of the blood. Dr Bigwood described with lantern photographs the posture test of Prof. Schiotz of Oslo by which it is claimed that slighter grades of malnutrition are revealed by the lines and contours shown by the musculature of the back

Figures were given of the results of some of these tests, as carried out in the elementary schools of Belgium Examinations of this type must he said at present be regarded as a subject for research rather than as routine methods but it is hoped, as a result of more widespread examinations and of correlation of the results obtained in different countries by these methods with those obtained from physical examination that more satisfactory objective criteria for the state of nutrition might be established.

Dr STIEBELING spoke of the conference of representatives of National Nutrition Committees held at Geneva in February, which she had attended as the United States representative. The aim of the council of the League in calling this conference was to collect information about the status and composition of such committees in the different countries, and about the work done and methods employed "to determine the state of nutrition of the national population and to spread the principles of improved nutrition among the population." Dr. Stiebeling described the extensive and well controlled nutritional investigations which had been initiated by the U.S. federal government. It was expected that these studies when complete would yield information of the total national consumption of the various foodstuffs in feeding of farm animals and in human dietaries, and of both qualitative and quantitative composition of the average diets consumed in the different income groups in the different States. Few results, she said, are yet available from this inquiry which is both laborious and costly, and will extend over several years. The importance of such work, carried out on an adequately large scale, cannot be over estimated, and the example set might with advantage be imitated by European countries.

REVIEWS AND NOTICES OF BOOKS

A Manual of Pharmacology

Eighth edition. By the late WALTER DIXON, M.D., B.Sc., F.R.S., sometime Professor of Materia Medica and Pharmacology, King's College, London. Revised by W. A. M. SMART, M.B., B.Sc., M.R.C.S., Lecturer in Pharmacology and Toxicology, London Hospital Medical College. London: Edward Arnold and Co. 1936. Pp. 483. 18*s*.

THIS text book was not the least of Dixon's many contributions to science in general, and to medicine in particular. It was last revised in 1929, two years before the author's death, and the rapid advance of knowledge in pharmacology has rendered further revision essential.

Dixon's book had certain characteristic features. It was dogmatic in its teaching and on controversial topics gave as a rule only the author's point of view. It contained a large number of illustrative tracings obtained in his laboratory, which fortunately have been retained in the new edition, and it tended to emphasise the scientific bases rather than the therapeutic applications of the subject. More systematic discussion of therapeutics has now been supplied, but the allocation of space does not always correspond with the importance of the subject. Another change is the inclusion of a large number of structural chemical formulæ. The book is, in fact, more complete in this respect than any other of comparable size, and for this reason alone is worth a place on the shelf of the pharmacologist or the chemist. The medical student, however, may feel with some justification that the amount of space devoted to formulæ is often disproportionate to that devoted to the actions and uses of the drugs they represent. The same lack of balance is evident in the amount of information given about different drugs. Thus twenty pages are devoted to aconitine, veratrine and the nicotine, coniine and curare groups of drugs—substances of pharmacological rather than therapeutic interest; and only twelve pages to the vitamins, the hormones (including pituitary, thyroid, parathyroid, suprarenal and liver extracts and adrenaline, insulin and ephedrine), vaccines, and sera. The use of liver and stomach extracts in macrocytic anæmias, perhaps the most striking therapeutic advance of the last decade, is dismissed in ten lines, while discussion of the cyanides fills six pages. This disproportion is the weakest feature of the present edition.

A commendable innovation is the introduction of several prescriptions, but unfortunately these are not always happily chosen. Sodium, potassium, and ammonium bromides have an identical pharmacological action, and a mixture of the three, as in mist. bromid. co. (p. 48) merely adds to dispensing costs without corresponding advantage. Of heroin it is rightly stated in the text that "its use might be forbidden without harming a single genuine patient," and yet a linctus containing heroin is included in the prescriptions. Guy's pill (p. 422) is little used to day, not because it is inert, but because the dose of digitalis is more conveniently adjusted independently of other drugs, and also because the organic mercurial preparations have largely replaced inorganic mercury as diuretics in cardiac disease. It is, of course, easy to criticise time honoured prescriptions in this way, but it is surely not the place of the pharmacologist to perpetuate those which, as a result of recent research, are being discarded by modern physicians. The author expresses in his preface a decided preference for the metric system of dosage, and yet in the prescriptions, and indeed throughout the text, the Imperial system is used almost exclusively.

The book has been brought up to date in several important respects, as by reclassifying drugs acting on cholinergic nerve endings (although few would include histamine among these), and by describing newly introduced substances such as ergometrine, mandelic acid, yatren, and cyclopropane.

Pneumonia

Diagnosis and Treatment. By CAMPBELL P. HOWARD, B.A., M.D., C.M., F.R.C.P. & S. Can., late Professor of Medicine, McGill University, and Physician to the Montreal General Hospital. London: Humphrey Milford, Oxford University Press. 1937. Pp. 373. 31*s*. 6*d*.

THIS book is written rather in the Germanic fashion. The wealth of data is well summarised, but a general lack of critical analysis and correlation of recorded work gives the impression that the author has not himself actively participated in the recent advances in diagnosis and treatment of pneumonia. The inclusion of 340 references accurately quoted in the 235 pages devoted to lobar pneumonia indicates, however, that he has read widely, although British work receives scant attention. Griffith's pioneer work on mutation of pneumococcus types, for example, is not mentioned, while there is no reference to the report to the therapeutics trial committee of the Medical Research Council on the serum treatment of lobar pneumonia.

After a historical introduction, succeeding chapters deal with infection and immunity, morbid anatomy, symptomatology, physical signs, complications, diagnosis, prognosis, and treatment of lobar pneumonia. There are numerous statements throughout the text which are at variance with current practice and belief—e.g., p. 24, "in most clinics at the present day Blake's precipitin mouse method is the one employed"; p. 30, "carriers of fixed types are rather frequent among the population at large"; p. 33, "all are agreed that the virulence of the pneumococcus varies greatly from year to year." In the chapter on treatment the indications for and against serum therapy might have been marshalled together with the methods for rapid pneumococcus typing The two concluding chapters deal with broncho pneumonia and the common cold the last one being perhaps the best in the book

Textbook of Medicine

Third edition By Various Authors Edited by J J CONYBEARE, M.C M D Oxon F R C P Physician to Guy's Hospital London Edinburgh: E and S Livingstone 1936 Pp 1027 21s

Conybeare's text book, which includes contributions by physicians from five of the London teaching hospitals and from places as far separated as Lucknow Johannesburg and Toronto has now completed its second four year cycle It is a middle weight among medical text-books offering the essentials of medicine within as small a compass and at as low a price as possible The teaching is clear concise and sound, and compression has not been applied to the extent of producing serious distortion. The new contributors in the third edition are Dr P M F Bishop clinical endocrinologist at Guy's Hospital, and Dr W D W Brooks of St Mary's who collaborates in the section on diseases of the chest Much rewriting has been done by the other authors including a complete recasting of the renal diseases section by Dr A A. Osman who now follows Fishberg fairly closely A short section on common skin diseases, doubtless in order to keep the price of the work low is entirely unillustrated We have no quarrel with its quality but it seems a pity to try to teach dermatology without pictures and we doubt whether the fundamental unity of dermatology with general medicine will be made evident to the student by these fifty pages It is difficult enough in the present state of our knowledge to display this unity even to those of greater experience! Perhaps here condensation has gone a trifle too far but that is minor criticism of a very serviceable book.

Frigidity in Women

Its Characteristics and Treatment By Dr EDUARD HITSCHMANN Director of the Psycho-analytic Clinic in Vienna and Dr EDMUND BERGLER, Assistant Director of the Clinic Authorised translation by POLLY LEEDS WEIL. New York: Nervous and Mental Disease Publishing Company 1936 Pp 76 $2

THE appointments held by the authors of this work entitle their views to respect Their thesis is the psychical nature of frigidity which they regard as a pathological inhibition not only preventable but curable In successive chapters they describe the development of female sexuality the characteristics of the female sexual life, the symptomatology degrees and types of frigidity; an account is given of two patients to illustrate success following treatment by psycho analysis and lastly we are told how frigidity may be prevented and treated

Upon the reader untrained in the technique of psycho-analysis and unfamiliar with its basic theoretical propositions, this book will make a complex impression He will recognise from the descriptions many female types and feminine reactions with which he is familiar; and despite the absence of any numerical records of successful cases, he will be impressed by the cures which the authors seem to have effected. At the same time he will find it difficult to accept the generalisations on the normal course of female sexual development upon which are based the diagnosis and treatment here described The average reader if he is not staggered with incredulity will regard the circumstantial account of penis envy as a normal phenomenon subject to what, in another context Prof. Whitehead has described as the fallacy of misplaced concreteness For descriptive convenience the concrete term is admittedly always preferable to the abstract If a little girl hates being a little girl, likes to dress and appear as a little boy and adopts an aggressive masculine attitude to the world it is perhaps more convenient to describe her attitude by the term penis envy than by other less concrete terms In some cases however the concreteness of the language, which is always disturbing to established ideas, appears to be inspired by a seemingly infantile desire to shock. It is tempting to administer to mulishly hostile and indignant critics outraged in their conventional ideas further shocks Among other pleasing consequences is the prospect of their powers of invective being eventually reduced to impotent inarticulateness.

Though indifferently translated this book may be read with profit by the larger circle of physicians to whom it is intended to appeal if they are willing to make allowances of the kind described.

Recent Advances in Anæsthesia and Analgesia

Second edition. By C LANGTON HEWER, M.B D.A. Anæsthetist and Demonstrator of Anæsthetics St Bartholomew's Hospital. London J and A Churchill Ltd. 1937 Pp 284. 15s

THERE has been considerable progress in the practice of anæsthetics during the five years since the first appearance of this book and to bring it up to date Dr Hewer has had to add eighty five pages even after he has discarded matter now obsolete. The newest agents, cyclopropane, divinyl ether and pentothal sodium are fully discussed as are also the interesting possibilities of electric anæsthesia A chapter each is devoted to thyroid and thoracic surgery subjects on which Dr Hewer can write with the authority lent by special experience Besides a chapter on carbon dioxide, which was to be expected the author has added one on oxygen therapy The fact that the anæsthetist's help is seldom requisitioned in this country for the purpose of oxygen administration far from making this chapter unnecessary or inappropriate suggests rather that his familiarity with the kind of apparatus used might make him a useful arbiter when methods are being debated. The book as a whole is well compiled and produced and will make an appeal to the senior student as well as to the specialist

Pediatric Nursing

By JOHN ZAHORSKY A B M.D F.A C.P Professor of Pediatrics, St Louis University School of Medicine. Assisted by BERYL E HAMILTON, R N Graduate of St Luke's Hospital St Louis London Henry Kimpton 1936 Pp 568 16s

THIS is an ambitious work and the first reaction of many medical practitioners to a study of its contents will be a fervent prayer that they may never have to work with a nurse who is fully conversant with its contents—her superior knowledge would be unbearable A closer inspection reveals that the details given in the earlier parts of the book under the general title of The Science are included so that the nurse may better understand the why and wherefore of the procedures described in the second part dealing with "The Practice" This latter is the more valuable part of the book, and novel chapters are included dealing with the organisation of a pædiatric department and of the nursery and with "the home and the family," a part of the world often forgotten by the hospital nurse The details on feeding have the usual disadvantage for British readers of being based on comparatively unfamiliar material, but English readers will note with satisfaction that the illustrations of typical stools are from specimens passed in Great Britain.

Birch's Management

And Medical Treatment of Children in India and the Tropics Eighth edition By Lieut Col E H Vere Hodge, B.A, M D Cantab, M R C P Lond., Professor of Medicine and Lecturer on the Diseases of Children, Medical College of Bengal, Calcutta, and First Physician to the Medical College Hospitals Calcutta Thacker, Spink and Co (1933), Ltd. 1936 Pp 377 Rs 7/8

Very few medical text books can have stood the vicissitudes of over ninety years, and though "Birch's Management" has passed through several hands since it first saw the light as a small, privately printed pamphlet in 1844, it has managed to retain much of its original character It is directed primarily to all those who have charge and care of children in the tropics, and who are out of reach of immediate specialist advice It follows that much of its content is concerned with general pædiatrics rather than with tropical medicine, and that the author has had to cater both for the intelligent layman and for the practitioner who has no special training in children's diseases A sensible compromise has been effected by marking certain of the more technical sections as being intended for practitioners, and by defining a number of common medical terms in the text With the exception of one or two slips (e g, that the tumour in pyloric stenosis will be found high up on the left side), the book is clearly written, reliable, and well balanced It is easy to appreciate what a stand by it must have proved to generations of parents, missionaries, and nurses

A Text-book of Medical Bacteriology

By R W Fairbrother, D Sc, M D, M R C P, Lecturer in Bacteriology, University of Manchester London William Heinemann (Medical Books) Ltd. 1937 Pp 437 15s

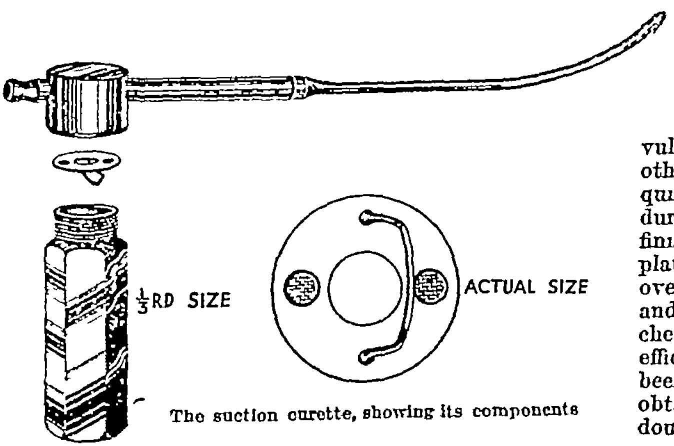
This short text book of bacteriology is likely to become popular with medical students because, though written on conventional lines, it is a clear, up to date, and readable account of those parts of the subject on which questions are asked at qualifying examinations The author has been wise to relieve his text of much of the technical detail which makes many otherwise good bacteriological manuals difficult for the student There are practical classes in which he should learn technique, and if he does not make use of this opportunity it is not likely that he can make good the deficiency from books As in nearly every other elementary text book of bacteriology there are too many subjects nibbled at, but not bitten into The paragraphs on some of the rarer infections are too short to be informative, and surely the mention of such obscure principles as the Forssman antibodies, leukins, and plakins is out of place in a book for elementary students

NEW INVENTIONS

COMBINED DIAGNOSTIC SUCTION CURETTE AND UTERINE SOUND

One of the greatest difficulties experienced during two years research work with œstrin at the Royal Infirmary, Bristol, was to get curettings on a definite day of the cycle To overcome this difficulty I designed a suction curette and collecting bottle, the use of which simplifies the technique so much that now patients can be curetted at a moment's notice in the out-patient clinic, and a specimen of endometrium taken with ease under nitrous oxide for unmarried girls, and 1 per cent novocain locally for married women

The instrument has a blunt, tapered sound like tip 5 5 mm in diameter, with an anterior and posterior cutting edge of stainless steel brazed to a malleable copper tube 4 25 mm in diameter and 6½ in long, with an anteroposterior eye just behind the cutting edge The malleability varies, being soft near the cutting edge and hard at its junction with a wider tube to which it is joined by a screw thread with milled nut The wider tube leads straight to the collecting bottle of brass (which is fitted as a pistol grip for the instrument) Suction is applied to an outlet in the same line as the tube, and this is obtained from a water suction pump The collecting bottle is fitted with a small trap which prevents any endometrium being sucked over even if the bottle is overflowing with blood, or with saline sucked in through the eye to wash through all the particles A suitable expanding speculum and a one toothed vulsellum are the only other instruments required for the procedure This instrument, finished in chromium plating, is compact—over all length 10¾ in. and handle 4½ in.—cheap, easy to use and efficient, and it has been useful also in obtaining curettings in doubtful cases of uterine growths



The suction curette, showing its components

I am indebted to Mr H L Shepherd for his encouragement and coöperation. The instrument was made for me by Messrs Ferris and Co, of Union street, Bristol.

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THE LANCET

LONDON SATURDAY MARCH 20 1937

THE ' EFFICIENCY ENGINEER

In many modern industrial processes human activities have become almost mechanical—a series of actions to be repeated thousands of times during the working spell If the human being be regarded solely from the mechanical aspect the total amount of the working day can thus be reduced to units of performance of the same task which can be timed Then if a normal timing can be found which takes into account the longer time taken by the slower workers to perform their units a rate of performance for each unit of work can be arrived at to which the slowest worker might be expected to work without undue physical or mental stress The faster workers who can exceed the average and do more units of work in a fixed time have an increased power of output which they can and do sell willingly to management and for which employers are prepared to bid There are various systems of this sort now on trial of which the Bedaux system is an example

Systems of payment by piece rates are not new It has long been recognised as fair that capacity to work easier and better than the ruck should be rewarded but piece rate payments based on time motion study are comparatively modern though time motion study itself is no new thing It dates from the days of Taylorism and the time motion studies of industrial physiologists or psychologists have done a great deal towards economising effort much to the advantage of employees in increased contentment and efficiency When the efficiency engineer however began to gain a footing in industry and the figures on which he estimated the length of time in which a particular piece of work should be done were accepted by management and piece rates based on them there was at first considerable protest from trades unions There is always a danger of speeding up if extra payment for performance above a certain standard is the chief incentive to work especially if the time of performance of each unit and the standard to be reached before extra payment is earned are fixed too arbitrarily The danger is the interference with the ordered working of the whole organism and whilst there is no reason to believe that the so-called efficiency engineers who are chiefly responsible for introducing these innovations have not taken physiological advice it is not so certain that employers will be equally alive to the danger of speeding up those of their employees who are only possessed of average or even of subnormal ability It is in fact known that the first fruits of introducing such incentives to efficiency have often been the elimination of the slower workers—a fact which has hampered physiological investig tion as these are the workers who might expected first to show effects of strain Agai there is nothing inherently unfair in endeavourin to retain only the most efficient workers or rewarding work in proportion to its efficienc Such a policy however if bureaucratically applie may easily lead to strain on the average worke and we are glad to learn that the Industrial Healt Research Board are investigating conditions work where "speeding up' may be possible wit a view to discovering where the occasions f strain exist—and might be abused

To the efficiency engineer the human bod may be a machine—it is in fact a most flexib machine—but it is to the physiologist the psych logist and the general practitioner that the resul of abusing the machine come They know th units of human work cannot be ticked out li seconds on a clock they know too that variation exist not only in a group but in each individu of it Mr S WYATT one of the investigato of the Industrial Health Research Board with hi colleagues was one of the first to demonstrat variations in the hourly output of workers engage in monotonous work. Others have shown th effects of adverse environmental conditions suc as inadequate lighting heating or ventilatio If the group varies how much more does th individual vary in those personal qualities temperament and ability on which uniformit of work so greatly depends ? And how responsiv is the human worker to understanding guidance The right person in authority may better th best devised financial incentive to work. Soci health is perhaps only on the periphery of th preventive medicine target There is a dange nevertheless that conditions of work which lea to speeding up'—which dangle before eac individual a financial incentive, like a bunc of carrots before a donkey s nose—may creat so many selfish individuals as to impair the menta outlook of an industrial people who have owe their greatness at least in some measure to th pursuit of altruistic ideals

THE TONGUE OF THE DEAF

Of all sense deprivations only deafness cut off a person from his fellows because deafness—unlike blindness loss of taste and smell and lo of touch—imposes a burden not only upon th possessor but upon his *normal companions* partially deaf person compels us to speak loudly and with the stone deaf even when they are skille lip-readers we feel obliged to enunciate our word more deliberately than usual Consequently th deaf are often thrown back for companionshi upon the society of those who share their dis ability In the annual report of the Nationa Institute for the Deaf a project for *founding o* Leagues for the Hard of Hearing is discussed wit the aim of bringing deafened people into touc with each other Many of them feel their isolatio keenly and would welcome social gatherings a which no one need feel at a disadvantage The ide is to establish a league which would meet regularly at the headquarters of the institute in Gower-street, in other parts of the country local branches could be formed, the deaf meeting at first in each other's homes, and later engaging premises as their numbers increased Besides the social advantage of these gatherings they would afford opportunity for practice of lip reading which is an art of inestimable value to the hard of hearing even if they ultimately have to learn a sign language for use on occasions where they cannot conveniently face their companion.

Is it desirable to teach sign language to children as well as lip-reading—an evergreen subject of debate, recently revived in the *Times*? Among the deaf themselves there seems to be no doubt that the use of signs may prove a convenient short cut, especially for those who find particular difficulty in lip reading Nor, as more than one correspondent insists, need the gestures be other than graceful and significant The Rev ARNOLD HILL PAYNE went so far as to claim that the sign language "is far more expressive, facile, and beautiful than the English of even Shakespeare or the Authorised Version of the Old Testament" None the less, the fact remains that to the ordinary person the sight of a roomful of people gesticulating, however competently, is grotesque, and does nothing towards bridging the gulf between the deaf and those who hear Miss A B S SPRIGGE, in an article in the January issue of *Speech*, sums up the importance of lip-reading, and of speech, for those born deaf in a telling sentence "I realised that unless I did something very drastic, in order both to improve my speech and get a wider vocabulary, I should never achieve my ardent desire to have as normal a social life as possible, to enjoy friendships, and to meet artists in connexion with my work" Her account of her own education in lip-reading and speech is one of laborious and steady effort, richly rewarded It is easy to see that many of the deaf may lose heart when faced with the prolonged study which goes to make a capable lip reader with intelligible speech, and many may take refuge, perhaps too readily, in the sign language which can be so much more quickly and easily learned But for those who can, and will, make the effort the gain in normal social intercourse is so great that it may well be better to avoid teaching the sign language to the deaf until years of patient training have shown that no other speech is likely to be acquired Deaf persons of high intelligence will be quick to realise the advantages of normal speech and will make the necessary effort Those among them who have any hearing at all for the voice, if only for vowels shouted close to the ear, will in the future be able to supplement the instruction they receive from sight and touch by the use of a sound magnifier This will not lessen, indeed it may intensify, the effort required, for they will have to learn to interpret and evaluate what they hear and correlate it with what they see and feel But the results of an experiment with magnified sounds carried out by Dr PHYLLIS KERRIDGE in coöperation with Dr A G WELLS and recorded in the green book published to-day by the Medical Research Council[1] shows that an immense improvement in speech may follow the combination of aided hearing and lip reading

SYPHILIS A MAJOR PROBLEM

THE report of the Royal Commission on Venereal Diseases in 1916 and the spread of venereal infection during and after the late war aroused general interest in measures designed to combat this menace to society The public conscience was further stimulated by skilful propaganda To-day, however, the position is reversed, propaganda has in recent years been less intense, and interest is waning There is a tendency, perhaps, to be a little too complacent about the partial success of the campaign In the United States, on the other hand, a more pessimistic outlook prevails, as may be seen in two letters we have received from a correspondent in that country[2]

The first of these was based on a meeting of health officers held last April and the papers then delivered have since been published at length[3] In one of them Dr EARLE MOORE said that in the States each year no less than 1,140,000 patients with syphilis come under treatment for the first time, of whom 518,000 are suffering from early and presumably infectious manifestations while 596,000 are in the later stages of the disease From the available evidence he concluded that less than half the syphilitic patients are treated during the infectious stages—a state of affairs he attributed to public ignorance, to failures in diagnosis, and to the fact that symptoms are often absent or slight during the period of invasion MOORE believes that this annual figure of over a million new patients would be increased to three millions if all possible steps were taken to discover those who are infected he estimates that at any one time 12,000,000 persons in the United States are suffering from syphilis, of whom only 683,000 are under treatment or observation The suggestions made for grappling with this appalling problem were considered by other contributors to the symposium they fall into four main groups—namely, the finding of cases, the education of patients and public, the education of the medical profession, and the provision of better facilities for attendance by patients and for diagnosis and treatment by practitioners Case-finding is to be achieved by the zealous tracing of contacts and by introducing blood tests as a routine for all persons attending hospitals or public institutions MOORE says he showed in 1923 that before the introduction of such tests no less than 5000 patients suffering from syphilis passed annually through the in patient and out-patient departments of the Johns Hopkins Hospital without their infection being recognised For the benefit of those who believe that such a routine test is undesirable or impracticable he points to the fact that in hospital obstetric work it has achieved a remarkable reduction in the incidence of congenital syphilis Dr VONDERLEHR, writing on the education of the public health officer recommends that those who combine clinical experience in the diagnosis and treatment of venereal diseases with an intense interest in the subject should be enabled to give their whole time to the organisation and coördination of venereal disease services Dr J H STOKES however wisely maintains that ultimate success depends on the coöperation of the ordinary medical practitioner since not even the most widespread organisation will provide clinics that are accessible to all and there will always remain a proportion of patients who insist on treatment by their private doctors He believes therefore that the most important of all measures is the early instruction of the practitioner who must not only get a thorough grounding at his medical school but must have every possible chance of gaining practical experience at a clinic

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[1] *Spec Rep Ser med Res Coun, Lond* No 221 London H.M Stationery Office 1937 Pp 137 2s

[2] See *Lancet* 1936, 1, 1083 Feb 20th 1937, p 466

[3] *J Amer med Ass* Sept 5th and 12th, 1936

In his annual report for the year 1935 the chief medical officer of the Ministry of Health refers to the continued decline in the number of cases of infectious syphilis attending public clinics in this country and expresses the opinion that this is a true reflex of diminution in the incidence among the population This opinion is of course based on convincing evidence which leaves no doubt that in this respect we are much more fortunately situated than are the peoples of the United States The evidence would be even more conclusive, however if it were supported by recent figures showing the incidence of latent or undiagnosed syphilis among various sections of the population A repetition of the type of serological investigations carried out by FILDES and by COLLIE who reported to the Royal Commission of 1916 and by ASSINDER[4] in Birmingham would give useful information and supply material for a comparison with the present situation in the United States and with the situation in this country twenty years ago

MEDICAL RESEARCH

To weave the changing design of current medical research on the framework of a command paper is a task for a craftsman The administrative staff of the Medical Research Council deserve gratitude for their skilled exposition year by year of investigations completed, still in progress or only projected The actual arrangement of the report varies little from year to year the classification adopted, partly topographical and partly topical is well designed to provide a readable document and to show without wearisome overlapping the interlacing of the studies in progress at different places It so happens that much of the distinguished work outlined in the introduction to the report which is summarised on page 709 is already familiar to our readers through its original publication in THE LANCET or through editorial comment. There is much to be gained from a retrospect in proper perspective of discoveries whose significance has since been confirmed and extended It is highly encouraging to find how often hopes modestly expressed have been justified and claims made with diffidence have been substantiated No doctor, however, least of all a doctor in practice should be content with a summary of this absorbing report For three shillings he can obtain an index to the fine contributions of this generation of British workers to medical progress and its study will effectively disperse any doubts whether the parliamentary grant-in aid, this year amounting to £105 000 is being spent to good advantage

SIR AUSTEN CHAMBERLAIN

THROUGH the sudden death of SIR AUSTEN CHAMBERLAIN on Tuesday last a great figure in the political life of this country has been lost. Not long since in times of the gravest international difficulty he exercised a driving power for a grand settlement of the discords following the war which foreshadowed at its inception noble results The Locarno Treaty has not as alas all know, effected its high purposes but it represents the finest effort made for peace since the Armistice and the principles laid down at its counsels will yet have their influence though economic crises have since occurred with disastrous effect on its ideals By his work at Locarno AUSTEN CHAMBERLAIN will always be remembered We make no attempt to detail the events of his long eventful political career—he received congratulations on his maiden speech from GLADSTONE and held all the high offices under the Crown save the Premiership of which his own generosity deprived him His labours at Locarno though now frustrated, will bear fruit in the future, while his example of consistency to high ideals, of immense industry in administration and above all of personal self abnegation make of him a noble character in British politics

Always inspired by the memory of his father it was inevitable that Sir AUSTEN CHAMBERLAIN should have close at heart the status the well being and the progress of our colonial dependencies The father's achievements in the field of tropical medicine were marked with all the qualities of personal character which lift the statesman above the politician and to those qualities the son succeeded The father had seen in the devastations caused by diseases peculiar to the regions one of the chief obstacles to the development of our tropical and subtropical dependencies and the outcome was the foundation of the London School of Tropical Medicine some thirty years ago Mr NEVILLE CHAMBERLAIN as Minister of Health laid the foundation-stone of the new building in 1926 and in 1932 Sir AUSTEN accepted the position of chairman of the court of governors of what is now the London School of Hygiene and Tropical Medicine He interpreted his responsibilities in the same spirit in which he had interpreted his high charges as statesman In order that he might obtain an intimate knowledge of the activities of the school he suggested that he should become a member of the board of management and in the result attended meetings of the board with the greatest regularity, and gave close personal attention both to the business management of the school and the work of the scientific staff The incorporation of the Ross Institute with the London School of Tropical Medicine in 1934 was largely due to his influence It was typical of the pains which he took to acquaint himself with the affairs of the school that, whatever the other claims on his time might be, he attended the annual students' dinner, devoting the evening to talking with individual students The school is yet a young institution and thus suffers from the lack of endowments It was always Sir AUSTEN's hope that an adequate endowment fund for the school would be created, and meanwhile he was tireless in his efforts to secure year by year donations and subscriptions such as might enable the school not only to balance its accounts but to meet urgent demands for expansion of its activities Some years ago Sir AUSTEN gave a further example of his deep and practical interest in the progress of medicine when he became chairman of the governing body of the British Postgraduate Medical School Here again he was not content with any ornamental rôle but acquainted himself thoroughly with the affairs and personnel of the institution Medicine loses in him a tried and valuable friend

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[4] *Bgham med. Rev* 1914 74 137

THE confusion that may arise between symptoms due to alcohol and to the after effects of insulin in connexion with motoring offences was well brought out in the mock trial organised by the Fellowship of Medicine which we report in this issue An actual case demonstrating this confusion was heard last week at Bow street police-court and is the subject of comment on p 716

ANNOTATIONS

DISEASE PREVALENCE IN U S A

EACH state of the U S.A has its own health laws, public health services and officers, and most of them issue reports of their own But the federal government exercises control over matters common to all the states and everything connected with migration from state to state, or from foreign countries So it comes about that the annual report of the Surgeon General is one of the most important of all health reports, not only to Americans, but to Europeans and, along with the report of the health commissioner with the Government of India, is looked upon as the chief annual record of epidemiological history This year the report[1] is by Dr Thomas Parran in succession to Dr H S Cumming who retired in 1936 after 42 years' service, during 16 of which he was surgeon general. From this report we derive much of our knowledge of the influence of western civilisation on diseases originating in the east, for the States are the birth place of most new infections and of modification of old ones It is, therefore, to be regretted that since the financial crisis the surgeon general's report has been cut down so much that it is difficult to follow, save by those who are familiar with the official and semi official reports of the American local health officers

To us the chief interest of the report lies in the division of scientific research and the epidemiological studies Investigation has revealed an "appalling number" of deaths from coronary occlusion, especially among white males below the age of 50 An increase of deaths in comparatively young people from forms of cardiac disease formerly ascribed to senile degeneration has also been noted in this country The observation that rats depleted of vitamin B are more susceptible to rat leprosy may have important bearing on the control of human leprosy It has long been clear that the St Louis epidemic of 1933 was not the encephalitis lethargica of Economo, further research suggests that the Los Angeles epidemic of 1934, at the time reported as poliomyelitis, was due to a fourth virus disease of the central nervous system Plague was introduced into North America at the beginning of the century and quickly became endemic in ground squirrels, the disease is spreading eastwards amongst native rodents, but human cases are not common In 1935–36 only four human cases were reported An important new fact is that the human flea carries *Pasteurella pestis* and will bite reservoir animals such as prairie dogs (marmots), as well as coyotes and deer At least four forms of typhus (rickettsia) occur in the States, of which Rocky Mountain fever is peculiar to the region from which it takes its name, this is spreading in extent and of the two forms one is highly fatal, the other benign Tularæmia is another disease first recognised in man in the Rocky Mountain region, but now known to be common in parts of Europe

The health statistics are cast for the calendar year 1935, which was a record year for good health in the States The death rate (for the 25 states furnishing data) was 10 8 and the infantile mortality 52 The maternal mortality, however, was still at the high level of 5 3 per 1000 live births New low death rates were recorded for typhoid fever and diphtheria, but poliomyelitis was severe with a total of 10,839 cases reported, against 7517 in 1934 and an average of 8249 Of recent years, poliomyelitis has been exceptionally well notified in the States, the difference between the reported incidence in America and in Britain, where notification is still faulty, is therefore partly fictitious

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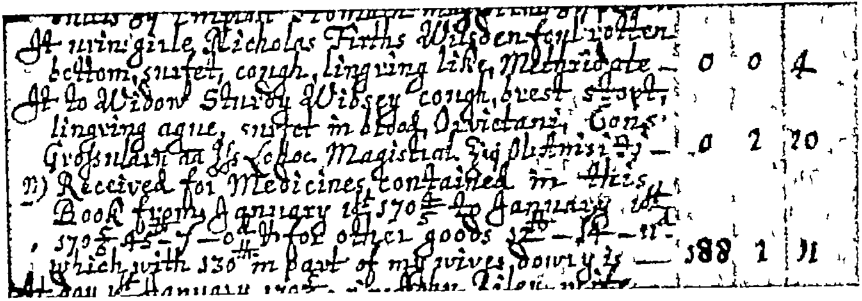
[1] Annual Report for 1936 of the Surgeon General of the Public Health Service of the United States Washington Government Printing Office 1936 Pp 155 $1

AN EIGHTEENTH CENTURY DOCTORS NOTEBOOK

"Till October 31st 1703 in old Note Book" are the words written at the top of the first page of an eighteenth century doctor's daybook, which has come into our hands through the courtesy of Mr Thomas Ottaway, coroner for St Albans The closely written pages of regular script which follow are of interest, for they give not only a detailed record of the money which the writer received day by day, but also reflect something of his way of living and working As will be seen, an entry usually consists of the name and address of the patient, a short pithy description of the symptoms, the prescription and/or treatment and then the fee Most of the entries begin with the word "Urin" which would seem to suggest that a great deal of the doctors treatment was based on uroscopy The urine is often described as having a "foul viscous bottom"



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lingring ague, surfet in blood, [illegible]
[illegible] Magistral [illegible] — 0 2 10
Received for Medicines contained in this
Book from January 1st 1705 to January 1st
1706 [illegible] for other goods [illegible]
which with 130 ℔ in part of my wives dowry is — 388 1 11

He does not seem to have visited his patients often at any rate he rarely records a visit. His usual fees vary from a few pence to somewhere about seven shillings The most prevalent diseases among his patients were aguish fever canker in gums windy pain in body inflamed ulcerated legs, stopt brest and a condition described as lingring like. There was a fair amount of scurvy and "rheumatismus and over and over again we find the words consumption feared A surfet of raw fruits seems to have been a common disorder among children But Robert Spence s son died of an illness which seems to have baffled and perturbed the doctor It is described as lingring convulsion, fits like possession joynts lost witchcraft feared The writer does not seem to have undertaken any obstetrics But after all though the male accoucheur had already begun to find favour in London the provinces were still prejudiced in favour of the midwife as shown by the experiences of Dr Slop several years later in the household of the enlightened Mr Shandy Sometimes our doctor says of a woman that she may be impregnate but he always seems to be actually treating her for some other condition Other fees which the doctor received are £3 4s 10*d* from a patient for advice and tabling for eight weeks and 3s 6*d* from the overseers of the poor for my horse and my own pains in going to Wakefield and Pontefract about Tim Hughes triall Another entry suggests a happy relationship between doctor and patients and a pleasant method of collecting fees— Reed of severall persons a voluntary gratuity when our friends came to visit us in all £6

At the end of each year the doctor sums up his financial position and in the first of the Decembers in his new notebook he writes received for medicines contained in the former Note Book and in this from January 1st 1702–3 to January 1st 1703–4 £50 18s 2*d* and for other goods £17 14s 8*d* being in all the sum of £70 12s 0*d* He seems to have married some time in 1705 a woman of some property for in his grand total at the end of that year is included a new item £130 in part of my wive s dowry and soon after there begin to appear receipts for rents " Reed. of Abraham Miller Skircoatt Green his Rent due to my Wife at Whitsuntide last £4 5 0 The system of deducting taxes at source seems to have been in force then and some of the rent receipts are elaborate

Received of John Pickles in Allerton his Rent due at Martinmass last deducting for poor assess, 8/– Land tax for half year 10/11¼ Constable lay 2/2¼ Mr Hayles Rent 12/2¼ window monies 3/– Church bag 2/6 at Court 2*d* Mrs Midgley rent 1/4 for stable setting 2 days 1/– gave him 11¼*d* in all £2 3 0¼ with R R and J D rents £4 10 from £11 2 there remains £4 8 11¼

Not all the entries are strictly medical: as when the calf of the starned cow is sold for five shillings or Henry Farrer of Lower Mill is let a cow s milk for one year for 10s When an animal is slaughtered Joseph Lister bought 'a fourth part of a fat cow besides the hide and tallow for 15/ while John Garnet had some of the worse tallow Many other homely details suggest a varied and pleasant life among congenial surroundings

THE DISEASES OF WILD ANIMALS

THE study of disease among wild animals has until recent years been confined chiefly to those important human or domestic animal infections such as plague tularæmia sleeping sickness nagana typhus and leptospiral jaundice, that are carried by various wild mammals The disease of the small mammals chiefly rodents used for laboratory work has more recently attracted attention Experimental epidemiology with white mouse populations has already thrown light on the processes by which epidemics come about—still one of the major mysteries of medicine The subject is finding a new extension by the discoveries of animal ecologists who find that disease is a widespread natural phenomenon in nature and especially among wild mammals, which suffer from rather violent fluctuations in population associated with periodic mortality on a large scale The annual report[1] for 1935–36 of the Bureau of Animal Population at Oxford University summarises some of the methods by which wild animal populations are being studied The approach is along three lines which cover the whole field of population dynamics The chief animals studied by this bureau are the vole or field mouse the partridge and the American snowshoe rabbit all three being species with strongly marked cycles of abundance and scarcity periodic outbreaks of disease and at the same time general economic importance Problems of census have necessitated the invention of entirely new methods for estimating density while the powers of increase are calculated from information obtained about reproductive powers length of life and breeding seasons The third phase of study mortality falls into the domain of pathology; with some ecological work on the question of predator control. Of special interest is the intensive study being made of fluctuations which occur every three or four years among wild voles (*Microtus agrestis*) on the Welsh and Scottish hills, for which purpose consignments of live voles are trapped and shipped to Oxford, where Dr A Q Wells, the Bureau's pathologist, working under Medical Research Council auspices, is undertaking a study of their diseases. One of the special features of these wild animal fluctuations is that they can be precisely followed in the field, and since the onset of periodic mortality is associated usually with high densities at the peak of each cycle, there are opportunities for finding some of the conditions in the early stages of an epidemic—a thing which is very difficult to do in human epidemics. The experimental side of the work has become possible through the domestication of the vole, as an easily maintained laboratory animal. This stage of the work has taken several years. The vole, having a rather different biological character from that of other small rodents commonly used in the laboratory, has an additional value for general pathological work. The Bureau is contemplating the study of other species in the future, and the report mentions the possible importance of extending the present number of laboratory animals by the conversion of wild rodents and insectivores for this purpose—a special job requiring an intimate knowledge of the habits and ecology of each species.

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[1] Annual Report of the Bureau of Animal Population (University Museum Oxford) 1935–36 Pp 1–48

Such population research has to be maintained for long periods if it is to yield successful results. In this respect one is reminded of meteorology and its need for comparable observations at different stations over many years. It is therefore satisfactory that Oxford University, in conjunction with other bodies, has made arrangements to guarantee the central costs of the Bureau's work for a period of five years at any rate. In addition to the research side of the Bureau's activities, mention should be made of its work in assembling the literature on wild animal populations. A useful list of recent literature is appended, and it is stated that this can be obtained by research workers independently from the main report. A feature of this list which strikes the eye is the world-wide distribution of field and laboratory work on wild animal populations and their diseases. The Bureau, which has a staff of six workers under the direction of Mr Charles Elton, should perform a useful function in canalising information, and in promoting by its research and its library the understanding of general principles of the fluctuations of hosts and parasites, a subject of which human epidemiology forms an important part.

LYMPHOGRANULOMA INGUINALE

At the meeting in May, 1934, of the permanent committee of the Office International d'Hygiène Publique in Paris, Carl Kling, representing Sweden, suggested that lymphogranuloma inguinale should be classed with the three main venereal diseases in so far as the benefits of the Brussels Convention of 1924 were concerned. It will be remembered that this convention provided for the free treatment in certain ports of seamen suffering from syphilis, gonorrhœa, and soft sore. Kling's suggestion led to an inquiry into the frequency and behaviour of lymphogranuloma inguinale, and in May, 1935, the outcome of this inquiry was discussed in Paris. While for various reasons the disease was not on this occasion promoted to the benefits of the Brussels Convention, further research was recommended. One of the first fruits of the recommendation was a report made to the Office by Dr B Bäfverstedt of Stockholm, and some of his findings are published in *Nordisk medicinsk Tidskrift* for Feb 20th of this year. It appears that the Swedish health authorities issued circulars in 1934 and 1935 informing the medical profession that lymphogranuloma inguinale would be included among the notifiable diseases till the end of 1937. Though this administrative measure may not have become general knowledge, and though the disease in question is apt to be overlooked and taken for some ailment other than lymphogranuloma inguinale, as many as 236 cases have been diagnosed in Sweden in the decade 1927–36. The bubonic form of the disease was observed in 219 men and in 6 women, while genito-ano-rectal elephantiasis was observed in only 3 men and in 8 women. Since the inclusion of lymphogranuloma among the notifiable diseases, the annual number of notifications has been about 20 to 25. The experience of two important Swedish hospitals is that for every two cases of soft sore there is one of lymphogranuloma requiring hospital treatment. This takes about eight weeks on the average and consists of incision or extirpation of the lymphatic glands, the intravenous injection of metallic salts, and vaccination with Frei's antigen. Radiological treatment has been attempted in some cases as well as treatment with artificial malaria. With regard to operative treatment, Bäfverstedt considers that the fear of post-operative elephantiasis is much exaggerated, and he knows of no such case in Sweden.

SECOND ATTACKS OF INFECTIVE DISEASE

It has long been a subject of speculation why certain infective diseases confer a more or less lasting immunity while others appear to give no immunity at all, indeed, in some cases, appear to dispose to further attacks. To a limited extent we have found explanations for these vagaries in immunity. In diphtheria, for example, we know that the insusceptibility conferred by an attack is associated with the development and persistence of antitoxin in the blood and that if the antitoxin falls below a certain level the chance that susceptibility will return becomes proportionately greater. The same explanation holds for scarlet fever, but here there are elements in addition to those that can be ascribed to a toxin, if scarlet fever in its complete clinical form rarely attacks the same person twice, there is reason to suppose that he may still suffer from further attacks of disease due to essentially the same microbic cause. There are diseases such as erysipelas, pneumonia, and the common cold where, at times at least, it appears that one attack only makes a later attack more likely. There are others such as typhoid, measles, and yellow fever where one attack almost always confers a lasting immunity. There are, again, diseases such as tuberculosis where an immunity can be experimentally demonstrated which is difficult to assess under the conditions of ordinary life. In spite of its many triumphs humoral immunity has failed to give us any final explanation as to the essential conditions of insusceptibility for most infective diseases. The decisive factor may be, and probably often is, a function of the cells or tissues, but we know very little as to the differences in behaviour between normal and immune cells and that little has shed less than the expected light on the actual problems of medicine. In a paper recently read before the Ipswich Medical Society, Dr Herbert H Brown discussed the possibility that those infections associated with a mononuclear (reticulo-endothelial) response are followed by a lasting immunity, while those associated with a polymorphonuclear response are followed by little or no immunity In support he quotes typhoid fever cholera, variola and vaccinia as examples of diseases with a mononuclear response pyogenic infections herpes simplex and the common cold as examples of those with a polymorphonuclear response That the facts of disease are in general agreement with Dr Brown s thesis cannot be denied and must have occurred to many observers of infections but there are difficulties in accepting the explanation in toto The toxigenic diseases such as diphtheria or tetanus are included by Dr Brown in the reticulo endothelial response group and he accepts the view supported to some extent by recent experimental work that this system is the main place for the elaboration of antibodies The exact part taken by the reticulo-endothelial system in the formation of antibodies is however still too uncertain to bear the weight of any secondary hypothesis Tuberculosis syphilis and the protozoal diseases do not readily fit into the scheme. We question whether the common cold can be correctly termed a disease with a polymorphonuclear response. In the present state of knowledge it would be unsafe to build too much on this apparent correlation between immunity and cellular response Some day we may find a rational explanation for it.

LONDON WATER ON VIEW

Increasing attention is being given to the effect of the micro flora and fauna of water other than bacteria on the use of water for domestic and other supplies Although many workers including Leeuwenhoek Ehrenberg and Savile Kent, have described and classified the diatoms and other algæ the infusoria and the animalcules which live in water their ecology has especially perhaps in this country received little attention. It is now being realised how much they prejudice the water-supply: whether by their growth in supply pipes which increases surface friction and decreases delivery capacity or by producing those tastes and odours which, apart from actual harm irritate and disgust consumers Some years ago the British Museum (Natural History) staged in the central hall at South Kensington an exhibit, arranged by R Kirkpatrick, in which amongst other things were shown the fresh water mussels which in the larval stage had passed through filter beds to reach maturity in the pipes A more comprehensive exhibit has now been set up in collaboration with the Metropolitan Water Board. The pipe fauna includes sponges and polyzoa (which as they grow harbour other creatures) molluscs hydroids eels and leeches The uncovered cistern forms a miniature lake in which the resting forms of organisms floating in the air may settle and grow Although rivers are nearly free from small organisms, the reservoirs in which river water is stored form good growing grounds for them and in fact develop typical lacustrine populations Iron bacteria have at times given cause for anxiety The growth in reservoirs of organisms which live but do not flourish well in rivers is illustrated by a series of photomicrographs taken at fortnightly intervals of the plankton of a reservoir showing the development of stephanodiscus a diatom which increased from Dec. 29th when very few were present to a maximum on Feb 9th when the numbers were enormous whilst by March 22nd the numbers had fallen to the same order as in December The control of algæ by coagulants and by algicides is illustrated and a series of graphs shows the successive diminution in numbers of coliform bacilli in raw river water stored water water after primary filtration secondary filtration and treatment with chloramine The minima in all cases occurred in July The exhibit is very lucidly set out and may be commended to lecturers on public health subjects as likely to give their pupils as much instruction in half an hour as could be assimilated in several formal lectures

THE PREVENTION OF POST ANÆSTHETIC LIVER DAMAGE

The evil effect of some anæsthetics upon the parenchyma of the liver has long been known and delayed poisoning from chloroform is regarded as the classic example. Experimentally ether by very prolonged administration and Avertin have also been shown to produce necrotic changes in the liver cells. It has never been suggested however on clinical grounds that there is any association of these injurious effects with oxygen shortage and the only preventive and remedial measures have been confined to giving a high carbohydrate diet beforehand and glucose by mouth rectum or vein after operation Recent experimental work by Goldschmidt Ravdin and Lucké[1] shows that at any rate in the dog mixing certain anæsthetics with pure oxygen instead of air has a great influence in preventing damage that would otherwise occur the oxygen having a definite protective action They administered chloroform to dogs for an hour some having air and the others oxygen and killed them four days later, when they found considerable differences between the two groups The livers of those dogs that had inhaled oxygen were abnormal in only 32 per cent, while with air there was necrosis in 73 per cent this being extreme in 10 per cent. Similar results were obtained with divinyl ether They went on to investigate the question whether anoxæmia of itself without any anæsthetic, could be responsible for similar effects and they proved that it could Dogs submitted to an atmosphere of 15 per cent oxygen and 85 per cent nitrogen for two hours, and subsequently examined post mortem showed degenerative liver changes in 28 per cent These experiments seem to be important in giving scientific support to the already common practice of adding pure oxygen to inhaled anæsthetics If what is true of the dog holds good in man this oxygen inhalation will be as effective in preventing liver damage as the usual several days preoperative administration of a high carbohydrate diet

ASSOCIATION OF INDUSTRIAL MEDICAL OFFICERS.—At a quarterly meeting of this association held in the London School of Hygiene, Keppel-street on March 12th Dr L. P Lockhart being in the chair a discussion on Accident Proneness was opened by Mr Eric Farmer reader in industrial psychology Cambridge University He briefly summarised the investigations which he and other workers had carried out on accident proneness and put forward certain suggestions for future coöperative work between the Industrial Health Research Board and industry if practicable through the industrial medical officer.—Dr F H C Beards (I C.I Billingham) read a paper on the Organised Treatment and Rehabilitation of the Injured Workman He outlined the progress of the patient from the time of injury to the time of resuming work and the difficulties of the present procedure in rehabilitation making suggestions for improvement He divided accidents into minor and major cases remarking that in importance they were equal He would like to see the provision of alternative work schemes in industry; this could best be done he thought by coöperative effort of industrial medical officer and works management Only the larger firms could afford to employ whole- or part time medical officers but he felt that much more could be done to help the smaller concerns.

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[1] *J Pharmacol* January 1937 p 1

PRINCIPLES OF MEDICAL STATISTICS

XII—COMMON FALLACIES AND DIFFICULTIES

In the following sections I have set out examples of the misuse of statistics In some of them the actual figures have been taken from published papers, in others hypothetical figures have been used to indicate the type of error which has led the worker to fallacious conclusions No principles are involved that have not been discussed in the previous sections The object is merely to illustrate, at the risk of "damnable reiteration," the importance of these principles by means of simple numerical examples (in some instances—e g, (*a*) below—the figures are deliberately exaggerated to make clearer the point at issue) The fact that in practice such grossly exaggerated differences rarely occur does not lessen the importance of accurate statistical treatment of data Differences do occur very often of a magnitude to lead to erroneous conclusions, if the data are incompetently handled in the ways set out

Mixing of Non-comparable Records

(*a*) Let us suppose that in a particular disease the fatality rate is twice as high amongst females as it is amongst males, and that amongst male patients it is 20 per cent and amongst female patients 40 per cent A new form of treatment is adopted and applied to 80 males and 40 females, 30 males and 60 females are observed as controls The number of deaths observed amongst the 120 *individuals* given the new treatment is 32, giving a fatality rate of 26 7 per cent, while the number of deaths observed amongst the 90 *individuals* taken as controls is 30, giving a fatality rate of 33 3 per cent Superficially this comparison suggests that the new treatment is of some value, in fact that conclusion is wholly unjustified, for we are not comparing like with like The fatality rates of the total number of individuals must be influenced by the proportions of the two sexes present in each sample, males and females, in fact, are not equally represented in the sample treated and in the sample taken as control Tabulating the figures shows the fallacy clearly (Table XIV)

TABLE XIV

—	Males	Females	Males and females combined
Normal fatality rate	20 %	40 %	—
Number of patients given new treatment	80	40	120
Deaths observed in treated group	16	16	32
Fatality rates observed in treated group	20 %	40 %	26 7 %
Number of patients used as controls	30	60	90
Deaths observed in control group	6	24	30
Fatality rates observed in control group	20 %	40 %	33 %

The comparison of like with like—i e, males with males and females with females—shows that the treatment was of no value since the fatality rates of the treated and untreated sex groups are identical, and equal to the normal rates Comparison of the total samples, regardless of sex, is inadmissible for the fatality rate recorded is then in part dependent upon the proportion of the two sexes that are present There are proportionately more females amongst the controls than in the treated group and since females normally have a higher fatality rate than males their presence in the control group in relatively greater numbers must lead to a comparatively high fatality rate in the total sample Equally their relative deficiency in the treated group leads to a comparatively low fatality rate in that total sample No comparison is valid which does not allow for the sex differentiation of the fatality rates

An actual example of this error is in the record of a less favourable reaction of females to forms of treatment for syphilis It should not be forgotten that when two such forms of treatment are being compared, sex differentiation, in assessing the results (or sex equality in the two groups), may be of *importance*

(*b*) One more example of the result of mixing non comparable records may be given The following (hypothetical) figures show the attack rates of a disease upon an inoculated and an uninoculated population (Table XV)

TABLE XV

Year	Number of persons		Number of persons attacked		Attack rates per cent	
	Inoc	Uninoc	Inoc	Uninoc	Inoc	Uninoc
1935	100	1000	10	100	10	10
1936	500	600	5	6	1	1
1935 and 1936	600	1600	15	106	2 5	6·6

In each calendar year the attack rate of the inoculated is equal to the attack rate of the uninoculated. Between 1935 and 1936 there has, however, been a large change in the size of the inoculated and uninoculated population and also a large change in the level of the attack rate Summation of the results for the two years leads to the fallacious conclusion that the inoculation afforded some protection The large uninoculated population in 1935 when the attack rate was high leads to an absolutely large number of cases—though in relation to their numbers the uninoculated are at no disadvantage compared with the inoculated The inoculated cannot contribute an equal number of cases for the population at risk in that year (1935) is far smaller Thus amalgamation of the unequal numbers of persons exposed to

TABLE XVI

Year	Number of persons		Number of persons attacked		Attack rates per cent	
	Inoc	Uninoc	Inoc	Uninoc	Inoc.	Uninoc
1935	100	1000	10	100	10	10
1936	500	600	50	60	10	10
1935 and 1936	600	1600	60	160	10	10
1935	500	600	50	60	10	10
1936	500	600	5	6	1	1
1935 and 1936	1000	1200	55	66	5 5	5 5

different risks in the two years is unjustified No fallacy would have resulted if the attack rate had not changed or if the proportions exposed to risk had not changed as the above figures show (Table XVI)

When the populations at risk and the attack rates *both* vary the calendar year becomes a relevant factor and must be taken into account by the calculation of rates within the year

Such a problem does arise quite frequently in practice for example in assessing the incidence of diphtheria on immunised and unimmunised children The numbers in the immunised group vary from year to year and the incidence of diphtheria also varies Summation of the experience over a series of years may lead to an erroneous conclusion of the type illustrated

Neglect of the Period of Exposure to Risk

(*a*) A further fallacy in the comparison of the experiences of inoculated and uninoculated persons lies in neglect of the time during which the individuals are exposed first in one group and then in the other Suppose that in the area considered there were on Jan 1st, 1936 300 inoculated persons and 1000 uninoculated persons The number of attacks are observed within these two groups over the calendar year and the annual attack rates are compared This is a valid comparison *so long as the two groups were subject during the calendar year to no additions or withdrawals* But if as often occurs in practice persons are being inoculated *during* the year of observation the comparison becomes invalid unless the point of time at which they enter the inoculated group is taken into account

Suppose on Jan 1st 1936 there are 5000 persons under observation none of whom are inoculated that 300 are inoculated on April 1st a further 600 on July 1st and another 100 on Oct 1st At the end of the year there are therefore, 1000 inoculated persons and 4000 still uninoculated During the year there were registered 110 attacks amongst the inoculated persons and 890 amongst the uninoculated If the ratio of recorded attacks to the population *at the end of the year* is taken then we have rates of 110/1000=11·0 per cent amongst the inoculated and 890/4000=22 3 per cent amongst the uninoculated a result apparently very favourable to inoculation This result however *must* be reached even if inoculation is completely valueless for no account has been taken of the unequal lengths of time over which the two groups were exposed None of the 1000 persons in the inoculated group were exposed to risk for the *whole* of the year but only for some fraction of it for a proportion of the year they belong to the uninoculated group and must be counted in that group for an appropriate length of time

The calculation should be as follows:

All 5000 persons were uninoculated during the first quarter of the year and therefore contribute (5000 × ¼) years of exposure to that group During the second quarter 4700 persons belonged to this group—i.e 5000 less the 300 who were inoculated on April 1st—and they contribute (4700 × ¼) years of exposure to the uninoculated group During the third quarter 4100 persons belonged to this group—i e 4700 less the 600 who were inoculated on July 1st—and they contribute (4100 × ¼) years of exposure Finally in the last quarter of the year there were 4000 uninoculated persons—i e 4100 less the 100 inoculated on Oct 1st—and they contribute (4000 × ¼) years of exposure The person years of exposure in the uninoculated group were therefore (5000 × ¼) + (4700 × ¼) + (4100 × ¼) + (4000 × ¼) = 4450 and the attack rate was 890/4450 =20 per cent —i e., the equivalent of 20 attacks per 100 persons per annum Similarly the person years of exposure in the inoculated group are (0 × ¼) + (300 × ¼) + (900 × ¼) + (1000 × ¼) = 550 for there were no persons in this group during the first three months of the year 300 persons during the second quarter of the year 900 during the third quarter and 1000 during the last quarter The attack rate was, therefore 110/550 = 20 per cent and the inoculated and uninoculated have identical attack-rates Neglect of the durations of exposure to risk must lead to fallacious results and must favour the inoculated The figures are given in tabulated form (Table XVII)

TABLE XVII

Inoculated at each point of time	Inoculated		Uninoculated	
	Exposed to risk in each quarter of the year	Attacks at 5 per cent. per quarter	Exposed to risk in each quarter of the year	Attacks at 5 per cent per quarter
Jan 1st, 0	0	0	5000	250
Apr 1st, 300	300	15	4700	235
July 1st, 600	900	45	4100	205
Oct 1st 100	1000	50	4000	200
Total at end of the year	1000	110	4000	890

Fallacious comparison—Ratio of attacks to final population of group Inoculated 110/1000=11·0 per cent Uninoculated 890/4000=22 3 per cent

True comparison.—Ratio of attacks to person years of exposure Inoculated 110/(300 × ¼) + (900 × ¼) + (1000 × ¼) =20 per cent Uninoculated 890/(5000 × ¼) + (4700 × ¼) + (4100 × ¼) + (4000 × ¼) = 20 per cent

This example is an exaggerated form of what may (and does) happen in practice if the time factor is ignored Clearly even if the time-factor is allowed for interpretation of the results must be made with care If the inoculated show an advantage over the uninoculated it must be considered whether at the point of time they entered that group the incidence of the disease was already declining due merely to the epidemic swing But that is another point

(*b*) A cruder neglect of the time factor sometimes appears in print and may be illustrated as follows In 1930 a new form of treatment is introduced and applied to patients seen between 1930 and 1935 The proportion of patients still alive at the end of 1935 is calculated This figure is compared with the proportion of patients still alive at the end of 1935 who were treated in 1925–29 prior to the introduction of the new treatment Such a comparison is of course inadmissible The patients seen in 1925–29 have by the end of 1935 had 6 to 11 years in which to succumb with an average exposure of 8½ years if their attendances were equally spread over 1925–29 The patients seen in 1930–35 have had only 0 to 6 years in which to succumb with an average exposure of 3 years if there attendances were equally spread over 1930–35 To be valid the comparison must be between the survival rates at equal stages of time 1 2 3 years &c after treatment

Absence of Exposed to Risk or Standard of *Comparison*

It often happens that an investigation is confined to individuals marked by some characteristic

(*a*) For example a detailed inquiry is made into the home conditions of each infant dying in the first year *of life* in a certain area over a selected period of time and it is found that 17 per cent of these infants lived under unsatisfactory housing conditions Do such conditions or factors associated with them lead to a high rate of infant mortality? The limitation of the inquiry to the dead makes it quite impossible to answer this question We need information as to the proportion of *all* infants who were born in that area over that period of observation who live under unsatisfactory housing conditions If 15 per cent of *all* infants live under such conditions, then 15 per cent of the deaths may reasonably be expected from those houses and unsatisfactory housing appears unimportant If on the other hand only 5 per cent of *all* infants are found in these conditions but 15 per cent of the deaths come from such houses, there is evidence of an excess of mortality under the adverse conditions In practice it may be impossible for financial or administrative reasons to investigate the home conditions of all infants It should be possible, however, to inquire into a random sample of them, say every tenth birth registered in the area over a given period of time Without some such standard of comparison no clear answer can be reached. Such limited investigations have been made into the problems of both infant and maternal mortality

(*b*) After very careful inquiry it is shown that of motor car drivers involved in accidents a certain proportion, say three quarters, had consumed alcohol during some period of hours previous to the accidents, and one quarter had not The deduction that alcohol contributes to the risk of accident is not justified from these figures alone It is well recognised that white sheep eat more than black sheep —because there are more of them Before the ratio of 3 " alcoholics " to 1 " non alcoholic " amongst the accident cases can be interpreted, information is also required as to the comparable ratio amongst drivers *not involved in accidents* Suppose, for example, there are 1000 drivers on the roads, and 48 accidents are recorded. Of the 48 drivers involved in these accidents three-quarters are found to have consumed alcohol—i e , 36—and one quarter—i.e , 12—have not If three quarters of *all* the 1000 drivers have consumed alcohol within a few hours of driving and one quarter have not, then the populations " exposed to risk " of accident are 750 and 250 The accident rates are, then, identical—namely, 36 in 750 and 12 in 250, or 4 8 per cent in each group A knowledge of the exposed to risk, or of the ratio of alcohol consumers to non consumers in a random sample of all drivers, is essential before conclusions can be drawn from the ratio in the accident cases

Careful inquiry into the destination of drivers involved in accidents on a Sunday morning might show that a larger proportion was driving to golf than to church. The inference that driving to golf is a more hazardous occupation is not valid until we are satisfied that there are not, in this case, more black sheep than white sheep [1]

Association, Direct or Indirect

It has been observed that while the death rate from cancer has been rising the sale of bananas in England and Wales has also been increasing No one (so far as I know) has deduced from this relationship in time a relationship of cause and effect But such a deduction would be no less logical than many that are drawn from time relationships—e g , the relationship of the cancer death rate to a hundred and one aspects of " modern " life

More often the time relationship is used as further evidence of a cause and effect expected on the grounds of quite other evidence—e g , experimental results

(*a*) For instance, the effect of bacteriophage is measured by comparing the incidence of cholera in two areas, one in which bacteriophage was distributed, the other serving as a standard of comparison In the former the incidence is found over an observed period of time to be at a lower level than the incidence in previous years or in the area observed as a control (the question of duration of exposure to risk, dealt with above, having been properly observed). It is clear that there is an association both in time and space between the incidence of cholera and the administration of bacteriophage Is that association one of cause and effect ? The answer must be that the results are perfectly *consistent* with that hypothesis, but that consistency is not the equivalent of proof. The incidence of epidemic disease fluctuates both in time and space for unknown reasons, and the abnormally low attack rates in the area in which bacteriophage was administered *may* be the result of the influence of those undetermined natural causes operating at the same time as the experiment was carried out Repetition of the experiment in another area with equivalent results would strengthen the hypothesis that bacteriophage was beneficial. With observations of this kind, limited in time and space, it is well to reflect upon the fact that " if when the tide is falling you take out water with a twopenny pail, you and the moon together can do a great deal " The history of scarlet fever may well be remembered, in this connexion, as illustrated by the testimony of R J Graves (" A System of Clinical Medicine," Dublin, 1843) In the first few years of the nineteenth century the disease " committed great ravages in Dublin " and was " extremely fatal." After the year 1804 it assumed a " very benign type " and was " seldom attended with danger until the year 1831 " In 1834 it again took the form of a " destructive epidemic " The low fatality after 1804 was " every day quoted as exhibiting one of the most triumphant examples of the efficacy " of new methods of treatment But Graves candidly admits that " the experience derived from the present [1834–35] epidemic has completely refuted this reasoning, and has proved that, in spite of our boasted improvements, we have not been more successful in 1834–5 than were our predecessors in 1801–2 " (quoted from Charles Creighton's " History of Epidemics in Britain," Camb Univ Press, 1894, Vol II, pp 722–25)

(*b*) During an epidemic individuals are, *at their own request*, inoculated, and are found to suffer a lower attack rate than that of the uninoculated. This result is clearly consistent with the hypothesis that the inoculation was beneficial. On the other hand, the association may be an indirect one Presuming that the inoculated and uninoculated groups were equal in such characteristics as age, sex, and duration of exposure to risk, it is possible that they were differentiated in other relevant ways Those who voluntarily come forward for inoculation may consist of individuals who also take other precautionary measures to avoid infection—e g , the avoidance of theatres and cinemas during the epidemic period They may belong to a class higher in the social scale and be less exposed to the risk of infection thereby—e g , by living in less crowded conditions or by being better nourished. In comparing the inoculated with the uninoculated we must always consider closely whether we are in fact comparing like with like—except in the one respect of inoculation

A B H

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[1] Lest it should be thought that undue stress is being laid upon the obvious the following quotation from a debate in the House of Lords may be of interest A noble Lord is reported (*Times* Feb 7th 1936) to have said that only 4 per cent of the drivers involved in fatal accidents were women and that was because they drove *more slowly* Without evidence of the hours of driving endured (perhaps a fitting word nowadays) by each sex—and perhaps of the type of area—that conclusion cannot be justified

SPECIAL ARTICLES

MEDICAL RESEARCH COUNCIL

ANNUAL REPORT 1935–36

THE report of the Medical Research Council for 1935–36[1] begins on a note of welcome to Lord Balfour of Burleigh as the new chairman succeeding Lord Linlithgow and of congratulation to Sir Henry Dale F R S director of the National Institute for Medical Research on the award of the Nobel prize for medicine jointly with Prof Otto Loewi of Graz

This award recognises their work on the nature of the chemical mechanism involved in the transmission of nerve impulses Sir Henry Dale and his co-workers showed that acetylcholine is the chemical transmitter not only of the vagal impulse to the heart muscle but of other parasympathetic nerve activities and also of some sympathetic actions They have now established that acetylcholine is also the medium through which motor nerve impulses activate voluntary muscle probably indeed the transmission of the effects of most efferent impulses throughout the peripheral nervous system is dependent at some stage or other on this chemical action

The physiological and clinical implications of this brilliant work are not yet explored Already however it has provided a scientific basis for Dr Mary Walker's discovery that prostigmin alleviates cases of myasthenia gravis and there are indications that some compounds closely allied to acetylcholine, but more stable may have therapeutic value

It is customary for the council to select for comment in an introductory survey some dozen from the various schemes of research in progress This year increased space has been allocated to this survey which deals with clinical research; influenza nutrition; the prevention and treatment of childbed fever deafness the experimental study of epidemics; cotton dust asthma; tuberculous treatment by artificial pneumothorax and medical research in the tropics

Clinical Research

Lord Nuffield's gift to Oxford is welcomed as being fully in accord with the policy of the council particularly in its establishment of senior clinical posts on a nearly whole time basis Reference is made to the handicapping effect on research in clinical medicine and surgery of the claims of private professional practice and to the tendency for promising clinical investigators either to become increasingly absorbed by their patients or to transfer their interests to research in other fields The increase in the number of substantially whole-time clinical posts candidates for which are expected to have had experience in research makes the opportunities at Oxford and on a smaller scale at Cambridge under the direction of Prof J A Ryle, of special importance The council's contribution to the training of investigators in clinical science and experimental pathology during the year under review has been the establishment of six post-graduate studentships and four research fellowships.

Influenza

The investigations on influenza at the National Institute for Medical Research by Sir Patrick Laidlaw F R S Dr C H Andrewes Dr Wilson Smith and Dr Stuart Harris (holding a Royce fellowship) have made substantial progress Attention is here drawn to three aspects of it.

(1) *World wide diffusion of the virus originally isolated and identified at the Institute*[2]—Filtered nasal washings from patients suffering from typical influenza in widely distant parts of the world (as England Porto Rico Philadelphia Alaska, Australia Holland European Russia) when inoculated into ferrets causes the appearance of the same virus in their respiratory passages this virus will then infect other ferrets and can be transmitted to mice This evidence suggests strongly that the virus thus propagated in the ferret is the primary infective agent of epidemic influenza in man.

(2) *Transmission of ferret influenza to man*—The accidental infection of one of the team of workers from a ferret and the subsequent demonstration of antibodies in his blood-serum which had previously been negative provided the important link completing the chain of evidence for the identity of the virus maintained and studied for over two years in ferrets as the cause of human influenza it also provided additional evidence of a connexion between the virus-neutralising antibody in the blood-serum and resistance to infection Negative evidence pointing in the same direction has been obtained by Dr Stuart Harris who found that blood-sera of inhabitants of St Helena, which escaped the pandemic of influenza in 1918 had no neutralising antibody for the virus These islanders have since suffered from an epidemic disease resembling influenza and samples of sera from persons affected are being examined

(3) *Possibility of immunising man against influenza*—Substantial progress has been made by Dr Andrewes and Dr Smith towards the production from the virus of a vaccine potent and pure enough to be worth testing for its value in immunising the human subject A virus of such potency has been obtained that the filtrate from the lungs of infected mice is able to infect a mouse in a dilution of one in ten million; and this virus can be made completely non infective without appreciable loss of antigenic value by treatment with very weak formaldehyde The virus in the living state is apparently innocuous when given by hypodermic injection and is being used in that way for immunisation trials in the United States

A vaccine purified by ultrafiltration has been found in the mouse to confer a substantial degree of resistance to infection by the respiratory passages, and trials of its immunising effect on man are in progress

It would be premature to attempt to estimate the probability of practical success with such methods Though a virus extracted from the infected mouse lung or from a culture on chicken embryo will newly evoke the specific neutralising antibody in the blood of a human subject or produce an increase of this antibody if it is already present it remains uncertain whether the amount of circulating antibody thus produced will confer a significant degree of resistance to naturally acquired infection or if it does how long such resistance would last But there is ample justification for hope

Nutrition

The relative importance of nutrition and exercise in the promotion of bodily and mental fitness is discussed; physical development and health are primarily dependent on proper feeding and exercises whether as games or drill are subsidiary to this and their full benefits can be obtained only in those whose bodily and mental qualities have been developed to their innate maximum by proper feeding

Among the investigations of nutritional factors supported by the council those deemed worthy of special remark are the studies by Prof E P Cathcart and Mrs A T M Murray of the ordinary diet of families in various towns, notably in St Andrews, Cardiff, Reading, and Glasgow Though the types of foodstuffs eaten varied within wide limits the distribution of calories between protein, fat, and carbohydrate eaten by people in different towns was found to be remarkably constant

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[1] Report of the Medical Research Council for the year 1935–36 London H M Stationery Office 193 Pp 172 3s

[2] *Lancet*, 1933 2 60.

According to these workers the daily diet of 109 women students (average age 21), whose general physique and health was reported to be very good, contained 2035 calories per person

Doubt is expressed whether much misplaced trust is not being put on the 3000 calorie intake as a standard figure The council point out that the Technical Commission on Nutrition, appointed by the Health Section of the League of Nations, decided that a daily allowance of 2400 calories net is adequate to meet the energy requirements of an adult, male or female, living an ordinary everyday life in a temperate climate and not engaged in manual work

Steps designed to improve the physical fitness of the community must take account of both the educational and economic aspects of this problem Even if there were abundant money for food expenditure in every household, ignorance and stupidity would often prevent the maximum nutritional benefits from being obtained, but the limiting factor in a large section of the community remains the food purchasing power

Dr R A McCance has analysed, for some fifteen different constituents, the chemical composition of some British foods, and the losses which they undergo during cooking 87 kinds of fish, 45 cuts of meat, 12 different birds, 65 fruits and 67 vegetables were studied, without ignoring the limitations of direct chemical analysis of food as a guide to its nutritional value Many accepted theories about cooking were not supported by the experimental evidence—e g, it makes no difference to the losses whether meat is plunged into boiling water at the start or placed in cold water and slowly brought to the boil, and although vegetables lose nutrients rapidly when they are cooked in water, they may be soaked and washed in cold water in the raw state without loss

Since diets can seldom be weighed or measured until after they have been prepared and cooked, the value of having reliable figures for the chemical composition of cooked foods should be appreciated not only by physicians but by those in charge of the dietetic departments of hospitals

Influence of Diet on Decay of Children's Teeth

The council observes that the theory advanced by Mrs M Mellanby on dental decay—that a dominant factor in determining the structure of the teeth and their resistance to decay is the nutritional condition of the body, and more particularly the supply of specific food elements provided to the teeth in early life—is based on experimental and clinical evidence which has been generally accepted by scientific workers, but it has met with criticism and even denial from some dentists It is almost impossible in a field experiment with children to secure controlled conditions in which all factors can be stabilised except the one under test, especially when this is a biological agent applied over a long period However, the results of a trial over a restricted period and subject to inevitable limitations which was undertaken at Birmingham on children living in institutions support convincingly the previous findings of Mrs Mellanby They are in agreement with her view, so far as vitamin D is concerned, that the teeth—like other organs of the body—are strongly influenced by nutritional factors brought to bear upon them, either through their blood supply or indirectly through the saliva The dental decay that developed in the children receiving vitamin D was definitely less than in the control children not receiving the additional amount of this substance

In one other important respect confirmation of earlier work by this report is deemed worthy of mention The less obvious forms of imperfect dental structure (hypoplasia), described by Mrs Mellanby in 1923 as not only widespread among children in this country but also directly related to liability to decay, were seen to be present in a large proportion of these children, whereas gross defects of structure (the "hypoplasia" of the text-books) were comparatively rare A direct relationship between the structure of the teeth and decay was also found.

These sample tests of Mrs Mellanby's thesis support the view that the most promising method, according to present knowledge, of improving the dental condition of this country is to increase consumption of milk and other dairy and market-gardening produce which benefit dental structure and resistance, and especially in the earlier years of life to reduce the consumption of bread and other cereals which either actively or passively result in the developmnt of defective teeth By this means it may be expected at least that the teeth of the next generation will be greatly improved.

Prevention and Treatment of Childbed Fever

After Dr Dora Colebrook's demonstration that hæmolytic streptococci, the micro organisms responsible for puerperal sepsis, are not present in the birth canal of normal women, but are conveyed thereto from the respiratory tract or skin of medical attendants, or of friends, or of the patients themselves, came the cheering news of the remarkable success apparently achieved at Queen Charlotte's Hospital by Dr Leonard Colebrook and his colleagues in combating this infection even when it is well established They used the German dye Red Prontosil and Prontosil Soluble, and are now making clinical tests of the colourless substance para aminobenzene sulphonamide, which is allied in composition to red prontosil, since experiments in progress suggest that it gives even better results[3] During the years 1931 to 1935, 495 cases of puerperal sepsis entered Queen Charlotte's Hospital, and of these 112 died, giving a fatality of 22 7 per cent In part of the year 1936, 64 cases of puerperal sepsis were treated by red prontosil and prontosil soluble in the same hospital, of these cases only 3 have died, giving a fatality of 4 7 per cent Moreover, there has been a sudden reduction in the severity of peritonitis associated with puerperal sepsis in cases treated with prontosil, and none of these patients developed a palpable pelvic or abdomino pelvic inflammatory mass or abscess after the beginning of treatment, although this is ordinarily one of the commonest complications of puerperal infections by hæmolytic streptococci If caution is still necessary in claiming success for this treatment it is because of the signs of a general diminution in the severity of puerperal sepsis in this country during the past five years, but a change in fatality rate from 22 7 to 4 7 per cent is at least strongly suggestive of the value of these new drugs, quite apart from the published records of surprising recoveries in individual cases Reliance on curative drugs must in any case be the third line of defence in the fight against puerperal sepsis The first line must be the conduct of childbirth in such a way as to prevent (*a*) access of pathogenic organisms, especially streptococci associated with sore throat to the birth canal of women, and (*b*) transport of these organisms from the skin and other parts of the body Secondly the resistance of pregnant women should be raised to the highest possible level by an ample supply of milk, green vegetable and other protective foods

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[3] See *Lancet* 1936 2 1310 and 1323

Deafness

The aspects of deafness which have been studied are (1) the actual range of defect in hearing as regards frequency and amplitude of sound in individual people and the amount of improvement that can be produced by mechanical means on the basis of this detailed knowledge (2) the degree to which deafness gives the clue to apparent mental retardation (3) prevention of acquired deafness

Dr and Mrs A. W G Ewing and Dr T S Littler have found that the results obtained by testing patients for a series of pure tones by means of the audiometer provide a reliable index of the intelligibility of speech to the deaf listener and in teaching that the class amplifier has a number of definite advantages over individual aids

Dr Phyllis Kerridge has concluded from the results of careful study that nearly all partially deaf children would benefit greatly by hearing-aids whereas among the deaf children—i.e those who cannot hear the conversational voice as far as two feet away—more than half would derive considerable benefit from sound magnification instruments

As to prevention the reports by Dr T E Banks and Dr Parkes of a lower incidence of inflammation of the middle ear and other sequelæ of scarlet fever and measles following the use of sera in London County Council hospitals are noted with satisfaction and the extension of such forms of treatment in these and other directions is anticipated

Experimental Study of Epidemics

There have been many productive clinical investigations into epidemic diseases but certain fundamental problems of epidemiology have resisted field investigation On the other hand a close experimental study of animals in a herd exposed to infection has already answered certain questions relative to human epidemics and may be expected to answer more in the future For the last 18 years a team now working at the London School of Hygiene and Tropical Medicine have exposed large numbers of mice to different infective agents and have studied their mortality rates and possible methods of altering these rates

It appears that in large herds or groups living under conditions favourable to the spread of epidemic disease and receiving regular additions of healthy animals the disease will persist indefinitely It also appears that under such conditions the form of the mortality curve and the size of the herd is determined in the main by the rate of immigration In certain epidemics the rate of mortality during the early days of herd life is very high, approximately half the entrants being dead after 2 days and three-quarters to four fifths after 50 days Between the 40th and 60th days of cage life the mortality rate reaches a low level The expectation of life from the 70th to the 90th day rises continuously but never reaches the expectation of normal mice living in the same environment but not in contact with an infective disease It is considered that these events show that both selection (by death of the more susceptible) and natural immunisation play a part in the increased average resistance displayed by surviving mice and that natural immunisation is more important than selection

As regards possible methods of interfering with the normal course of infected herds three of these have been studied—artificial immunisation changes in diet and bacteriophage The best results were obtained with artificial immunisation but a complete immunity was never obtained the dietary experiments were negative but recently Dr Marion Watson working in association with Prof W W C Topley F R S has obtained results which suggest that diet has a powerful influence on the mortality rates of mice infected artificially with *Bacillus aertrycke* Similarly the negative results obtained with bacteriophage are regarded as by no means conclusive Active immunisation though it has failed in these experiments to give results as successful as those reported from the field has significantly increased the expectation of life particularly in ectromelia epidemics It seems probable that the experimental method will make it possible to define more clearly the factors that determine the successful exploitation of this method of prophylaxis

Cotton Dust Asthma'

The disabling chest trouble due to the inhalation of cotton dust by certain workers in the cotton industry takes the form of attacks of cough or breathlessness occurring particularly on Monday morning after the week-end break. Gradually the symptoms spread over the ensuing days of the week and clinical examination of patients with established symptoms reveals the signs of chronic bronchitis and emphysema The death rate from bronchitis among male cotton strippers between the ages of 20 and 60 is five and a half times greater than that for all occupied and retired males and ten times greater than that in such dusty occupations as cement workers and lime burners Prof. Carl Prausnitz working in Maitland's department in the University of Manchester has investigated this problem He was able to show that although much has been done by mill owners to reduce the dust in card rooms the most dangerous fraction of cotton dust consisting of the particles under two microns in diameter still obtains access to the workers lungs the protein fraction of this dust contains some toxic factor which is probably responsible for the respiratory trouble Prof Prausnitz is not hopeful that desensitisation will improve the condition and since the present methods of ventilation and exhaust do not entirely exclude these minute particles the solution probably depends either on the adoption by the workers of suitable respirators of which a more satisfactory form is being sought or on the application of new means of preventing the particles from entering the air

Tuberculosis Treatment by Artificial Pneumothorax

The fate of patients receiving artificial pneumothorax treatment under the tuberculosis scheme of the London County Council between the years 1920 and 1930 has been reviewed by Dr F J Bentley

As a result of this study it emerged that those patients in whom complete collapse had been produced had a much higher rate of survival than those whose affected lung was only partially collapsed; also that success is more likely in the early stages of disease and where only one lung is affected It is interesting that favourable results in both sexes were found in the age group 25–30 while the age group 20 2 is peculiar in showing the best result in males and disappointing results in females Dr Bentley suggests that the treatment might well be used more extensively in young male adults

Artificial pneumothorax treatment is of limited application but in properly selected individual sufferers it sensibly increases the expectation of life and working capacity

Tropical Medicine

The concluding paragraphs of the introduction to this report record the formation and proposed activities of the new tropical medical research committee This committee has already made recommendations, on which the council have begun to take action, for the recruitment of able young investigators willing to work in the tropics and for the eventual establishment of permanent posts for research in tropical medicine, to which workers engaged at first on a temporary basis may reasonably aspire

In addition to launching this main scheme of fellowships and appointments, the council are prepared to assist research in tropical medicine in other ways as opportunity may offer In particular, grants will be available to enable workers in established positions at home, particularly those not having the facilities already possessed by the staffs of schools of tropical medicine, to make short visits to the tropics for the purposes of research or the collection of material

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AIR-RAID WARDENS

THE Air Raid Precautions Department of the Home Office issued last week a memorandum explaining the need for an organisation of citizen volunteers to perform a number of important duties in time of air attack, thereby augmenting and relieving the normal resources of the civil authorities and safeguarding the general public These volunteers, to be entitled Air Raid Wardens, would work in contiguity to their homes and places of business, their chief duties being to advise their fellow citizens on the precautions against air raids as officially recommended, in time of war they would know how to start relief measures and where to apply for appropriate help

THE DUTIES OF THE WARDENS

The wardens will require organisation and training and it is proposed that their work would always be done in consultation with the police It is expressly stated that they would be males, and that no direct responsibility for fire fighting will be laid upon them, as an auxiliary fire service will be formed by the fire brigade

The qualities and functions of a warden are set out succinctly in the memorandum He should be a responsible member of the public, well known and respected in his area, and his duty will be to supplement the resources of the police and fire brigade by rapid information as to the details of the fall of bombs, and by giving immediate warning of the suspected presence of gas It would be his duty to shepherd the public to shelter when an air raid warning has been received, and to deal with casualties or damage until skilled help arrives Lastly and most importantly, the wardens are urged to set an example of coolness and steadiness among their neighbours In each borough or district they should form a service of their own under a chief warden assisted by head wardens acting as group leaders

The distribution of civilian respirators will be in the hands of the wardens acting in collaboration with the local authorities It is recognised that the services of a considerable number of trained men intimately acquainted with the particular locality will be required, for in any immediate preparations for war members of existing public services might not be available Although the war duties of the wardens do not commence until the actual air attacks, the respirators should by that time be already distributed

THE WARDENS IN TIME OF WAR

It is proposed that the wardens should operate from fixed posts, each man being responsible for a defined group of streets, or "sector," and each post should be manned during a raid by two or three wardens The duties of the wardens, as set out, may be more particularly summarised thus To know the organisation in their locality, to advise persons in the street when an air raid warning has been given, and to report at prescribed places the presence of gas or fires and the falling of bombs in their sector Other duties are to estimate the extent of damage done and to be ready to report upon it, to assist occupants of damaged buildings to find new shelter, to guide the police, fire brigade, first-aid parties, and rescue parties on arrival upon the scene of damage, to convey messages or render any other assistance required by police or fire brigade officers, and to help householders or the personnel of fire posts to fight incipient fires, pending the arrival of the fire brigade And to assist in every possible way to prevent panic The Government will be responsible for equipment, and wardens, after training, will be eligible for the Air Raid Precautions badge

ORGANISATION OF AIR RAID WARDENS

There are many points yet to be determined before the Home Office plans can be regarded as complete, but alternative schemes of organisation are put forward Every scheme of organisation should provide for a chief warden in executive control assisted by head wardens in charge of groups of posts These leaders will be required whether the control of the wardens is placed in the hands of the chief constable or of some other local official. Subject to this general principle, the scheme of organisation of air raid wardens can take one of several forms, of which the following are the main types —

SCHEME A

Air raid wardens may be organised independently of the police, under the control of some local official other than the chief officer of police They would work under the chief warden, who would be in executive charge of the service in the local air raid precautions organisation, but responsible to the permanent official deputed to exercise supervision and control If this scheme is adopted, it is nevertheless recommended that the police should be consulted before the actual enrolment of wardens, to ensure that only suitable men are chosen This scheme will be adopted in the metropolitan police district because it is felt that the size of the district and the large number of important local authorities which it contains make it preferable to decentralise the air raid wardens' organisation It does not follow that it would be the most suitable scheme outside the metropolitan police district Where this scheme is adopted, it would be possible to employ some existing body or association as the agent for organising and training the air raid wardens, the chief warden being a responsible official of that body or association.

SCHEME B

An alternative scheme would be for local authorities to arrange the framework of the wardens organisation particularly as regards the numbers of wardens required and the location of their posts on the basis that in time of war they would operate under the control of the chief constable Each area would have its chief warden appointed by the local authority or authorities concerned in consultation with the chief constable, and the chief warden would be responsible for the recruitment and training of wardens with such assistance from the police as might be arranged This scheme is of a hybrid character but it is not considered that there need be any difficulty in its working smoothly, provided that close coöperation was maintained with the chief constable from the outset, and it might be suitable for parts of county police districts It would be possible here to utilise existing bodies or associations as the agent for obtaining and training individual wardens.

SCHEME C

Under Scheme C the responsibility for framing the organisation of the wardens in peace time as well as exercising control in time of war could be entrusted directly to the chief officer of police This scheme is particularly suitable for adoption in boroughs having their own police forces.

THE RESPONSIBILITY OF LOCAL AUTHORITIES

The functions of the wardens will be essentially local but the responsibility for initiating organisation should rest with the borough and district councils, and in deciding between the alternative schemes of organisation as set out above the chief constable of the county should be consulted. It is not considered essential that the same scheme should be adopted in all parts of the country although it would be inconvenient if any county became a patchwork of diverging schemes and here the suggestion is made that a conference of local authorities in the county or parts of the county the chief constable being present, would serve to secure practical agreement Whatever scheme of organisation is adopted the wardens should be treated as a distinct service but where organised under a chief constable the control would involve more work than could be borne by the police force; and while the chief constable or the senior police officer in the area would have the control a chief warden with special staff would be necessary to do the detailed work under him.

TRAINING FOR AIR RAIDS

The memorandum adds details as to the executive control of local schemes the distribution of the wardens posts and the numbers required and concludes with advice in respect of the training of the wardens for meeting air raids This it is said should cover the following subjects —

(*a*) A general knowledge of the local air raid precautions organisation.

(*b*) A knowledge of anti gas precautions.

(*c*) A detailed knowledge of the scheme for distributing civilian respirators in their particular sectors, when that scheme has been drawn up and of the sources for obtaining replacements in time of war

(*d*) A detailed knowledge of their duties: (i) in advising and assisting the general public in matters of air-raid precautions generally (ii) in assisting the local air raid precautions services and (iii) in reporting damage to the proper centre

Wardens it is added should be fully conversant with guidance issued by the Home Office to householders generally and should be able and ready to advise the inhabitants of their sectors both in peace and in times of emergency on points connected with home precautions, or any special instructions issued—e g removal of people from unsafe areas

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REMINISCENCES OF PAVLOV —Stories and incidents from the life of the Russian physiologist I P Pavlov as told by his associates and pupils to Prof K. S Koshtoyants of the All Union Institute of Experimental Medicine in Moscow will shortly be published by the Academy of Sciences of the U S.S.R in book form. Dealing with the period 1870 to 1905 the book will give a glimpse of Pavlov s early scientific work the methods he elaborated for studying the physiology of digestion and of the activities of his laboratory The Academy is also preparing for the press an academic edition of the complete works of Pavlov edited by Academician Orbeli

BOURNEMOUTH

CONFERENCE OF THE BRITISH HEALTH RESORTS ASSOCIATION

THE keynote of this conference held at Bournemouth on March 12th–14th was the need for more knowledge of climates At the opening session when the Mayor of Bournemouth took the chair a discussion took place on

Wintering in England

Lord HORDER pointed out that weather was not the same thing as climate; for that reason there were many advantages of wintering in England irrespective of whether the sun shone or not Exact knowledge about climate was not available to guide a doctor in his recommendation of choice of resort he could not be sure what air would suit a patient Lord Horder felt that the doctors of the resorts should get together and pool their knowledge in order to help those who were trying to cater for the invalid. Speaking more widely of health resorts in winter he said that the availability of sea water was of great importance and deserved attention Shelters and covered walks could be provided against the weather Great Britain was unique in its capacity to produce raw products but too often spoilt them in the cooking the old English inn must have been a roaring success and he did not see why the English hotel should not be as good as the continental one There had almost come to be an amenities front and he wished to see it kept at the best In particular attention should be paid to safeguard against noise There was the rowdiness of the adolescent and the deafness of old age but there were people whose appreciation of a health resort depended on the care spent in controlling noise; there were so many stresses and strains in modern life that could not be escaped why put up with that of noise when it could be dowsed? The noisy waiter should be eliminated as noisiness was infectious and spread.

Sir JAMES MARCHANT said that a thousand years ago an early visitor to Bournemouth had been Sweyn the son of the King of Denmark who came for three successive winters and had to be heavily bribed each time by the King of England to go away No country had so many types of scenery in so small a compass as England; were the health resorts doing all they could to preserve their natural qualities? The ironical thing was that the vandal knew a beauty spot when he saw it The resorts should have belts reserved for bungaloid fungus and slabs of flats and any vandal wanting to put up a building without an artistic architect s supervision should be made to choose a site in that belt The architects might hold licences and lose them if they permitted an eyesore outside the belt Noise and ugliness should be segregated The individualism which now marked the business of the health resorts should develop into a coöperative effort of all sections to plan the future of British resorts The medical profession might discover other ways of making greater use of them. The first line in the national defence was public health and our health resorts should be held in trust for the nation; with the coming change in age distribution there would be a vast increase in the numbers of potential customers

Dr K R COLLIS HALLOWES said that the majority of English people could winter in England more comfortably than abroad and with careful selection resorts could be found to meet all needs Some thought that an equable climate made a resort by itself, but for therapeutic success man's forethought was needed too In this country much more knowledge of climatology was required The medical men of the resorts should get together as the doctors at the inland spas had done and with the help of municipal authorities the resorts should combine in research work It was sometimes assumed that the suitability of a marine resort for winter residence could be decided by comparisons of the tables of meteorological figures and by digesting the attractively phrased literature issued by publicity departments, but these could not determine the reactions of an individual to a climate At some only of the marine resorts the meteorological station was under the supervision and control of the meteorological office Other records taken might have little value, giving "pocket climate" averages not comparable with those distinguishing other resorts Even at controlled stations along the coast, readings were taken under different conditions and were often not comparable Thunderstorm statistics were not always based upon official definitions but upon the opinion of the observer At present the figures recorded for ultra violet light were of problematic value, as the method used was not recognised by the Meteorological Office and the recording tubes were likely to be differently read by different observers Then, the invalid wanted to know what happened during the "invalid's day" between 9 and 5 rather than during the night, but the present methods of recording seldom indicated the humidity or the duration of frost or of rain between those hours Resorts should develop differently according to their amenities, and should cater for all weathers, there should be provision of social centres, clubs, indoor swimming pools, cheap transport between beach and apartments, combined season tickets for admission to municipal amenities, and ample facilities for sports Many winter visitors would prefer simple cooking, especially more attention to vegetables and more choice from pork on Sundays Medical practitioners had recently been urged by the British Medical Association to seek election to town councils, on grounds that such representation would be beneficial for the profession, the town council, and the community At winter health resorts such representation should ensure greater efficiency in development and strengthen the "Wintering in England" movement The marine resorts had in sea water unlimited supplies of a natural mineral water of known therapeutic value, which was entirely suitable for all bath, douche, and other methods of external treatment

Sir John Atkins said his impression was that some patients should winter abroad if they could afford to but the perils of the journey should be remembered exposure during the crossing and bother at the customs were examples It was better for some patients to winter in England but the resorts must pay attention to the needs of the patient and his friends He read a letter from one patient saying, "I'm sure you have no idea how deadly dull it is here" Abroad there were plenty of opportunities for recreation and the English resorts which did not cater, as Bournemouth did, for the visitor might as well be ruled out as far as wintering in England was concerned

Sir Archibald Weigall mentioned the enormous improvement in foreign spas and resorts in the last few years Other reasons for going abroad were the escape from the commercial atmosphere of the patient's ordinary life and the attraction of the recreation of gambling He mentioned the restriction imposed on English hotels by the licensing laws and said that the overhead charges due to legislation relating to employers and employees made cheaper and better accommodation impossible

Dr G de Bec Turtle had found that if patients felt they were at their best on their native heath they should be sent to the resort nearest to it

Dr W Asten stressed the importance of taking accurate meteorological readings and of putting them on a uniform basis

Dr Alfred Cox thought the hotel industry was unfairly treated by legislation, charges had to be high in consequence

The Mayor of Poole mentioned the great importance to health resorts of attracting not only visitors but also suitable residents, for example the retired Britons returned from the colonies

In the afternoon session, when Dr S Watson Smith took the chair, the subject of discussion was the

Curative Action of Sea Climate

Prof Otto Kestner, M.D, said that the gain in health and vigour obtained by living for some weeks by the sea was a matter of common medical experience In order to find out the mechanism of this peculiarity of the sea he had carried out investigations at the health resort of Wyk on the Island of Fohr in the German North Sea, on adults and children He had found that healthy adults showed very little reaction to changes in climate, but children, both healthy and ailing, reacted more and so were better for observation In them he had noted many changes The oxygen consumption was increased at the seaside as it was also in the Alps, and in both places this increase in metabolism was associated with retention of nitrogen Thus there is implied a building up of new tissue and that had been observed in adults and children, the circumference of the arms and legs definitely increased, that of the abdomen diminished The level of nitrogen excretion fell below that of the intake during the stay at the seaside, returning to normal when the children went home ,The curve of growth of the children similarly took an upward turn when they went to the sea and continued in a course parallel to its former gradient only on their return

At first he had found a correlation between the hours of sunshine and the increases in hæmoglobin and red cell count, but that was when the children went down to the sea only on sunny days, when they were sent regardless of the weather it was found that cold wind and fresh air had the same effect as the sunshine The stimulus of the sea increased the secretion of gastric juice, which he had measured by means of test meals, the hydrochloric acid content was higher and was not further increased by histamine, suggesting that it was already maximal A stay on the sea shore seemed to be a better way of increasing secretion than giving histamine The movements of the stomach were accelerated and even the finely regulated system of the blood sugar curve was not quite the same by the sea as in hospital There was no danger in satisfying the greater appetite even in people with low specific dynamic action who were inclined to grow fat, because the raised metabolism protected against that The increased appetite at the sea was very valuable for many of the children A good proportion of them were under nourished and for that reason had poor appetites, such children did not eat enough, even if the supply of good food was provided by parents schools or charity The action of the sea air was then of the greatest use in breaking a vicious circle.

The place of action of the sea climate was the skin. Humans differed from other mammals in being naked an attribute only recently acquired in the scale of evolution Many animals regulated their temperature by adjusting their combustion in the liver and elsewhere in man alone the adjustment was made by dilatation and constriction of the capillaries of the skin. If a man were cold his capillaries contracted down leaving a relatively avascular skin and layer of subcutaneous tissue which served him as an overcoat This was the best method of thermal regulation excelling any found in animals but was liable to be lost owing to our way of living Prof Kestner had examined the reaction in the children by touching the skin for three seconds with ice and timing the change from whiteness to reddening in the skin In healthy children this took only two seconds but took five in convalescent children before their stay at the sea As the results of the stimuli of the sea sun cold air and cold water the capillaries of the skin learnt their gymnastics again and the children could bathe in the sea and play naked in the open air even in winter time, without a decrease in body temperature The children in the convalescent homes at Wyk were in the open air for not less than four hours daily and twice a day for from five to thirty minutes naked even in winter the children liked it and were unhappy if forbidden to join in the capillary gymnastics The skin reactions were also sometimes sluggish in those with high blood pressure It was a rule of pathological physiology that a good remedy worked more energetically on the pathological than the normal organ. Curschmann who was continuing the observations had found that the blood pressure was not altered in normal people by sea bathing but was lowered in those with high pressure It could be decreased for a considerable time by repeated sea bathing in patients who had no anatomical alteration of the vessels. Curschmann had called the sea-shore the hypertonic s paradise

In conclusion the speaker emphasised that the stimuli of the sea shore could only be effective if the patients exposed their skin to them and there was no sea climate in the sheltered rooms of homes and hotels. When the doctor could adjust the dose to the individuality of the patients the sea climate was a powerful remedy

Sir WALTER LANGDON BROWN quoted Dr Leonard Williams s dictum that To prescribe change of air with intelligence it is necessary to have some knowledge of climatology to prescribe it with success it is essential to have some acquaintance with different localities He had often been asked by patients to recommend a climate which was warm dry and equable to which he replied that they might find it in Heaven but that they would not do so on earth The moisture in the air was a potent factor in maintaining an equable temperature in a dry climate the temperature was of necessity liable to considerable fluctuations and on the high veldt in South Africa he had seen a mirage at three o clock and hoar frost by half past six Such a climate however stimulating to those who were well was trying to those who were in poor health. Man had been described as an automatic thermostat but the maintenance of a constant temperature imposed a tax on the heat regulating centres and on the heat producing structures in the viscera The importance of rest in the treatment of febrile tuberculosis was clearly recognised It was also true that a fairly constant environment saved effort on the part of the heat-regulating mechanism, a fact of importance for those suffering from physical or nervous exhaustion

The seaside could not claim to offer a panacea in the way of climate gouty subjects usually did better at an inland resort. Some with paroxysmal neuroses did not do well though in this respect as in so many others the asthmatic expressed his idiosyncrasy Bracing marine climates were not always suited to cases of insomnia, but he had found, like many tired or neurasthenic patients that Bournemouth increased the natural capacity for sound sleep For chronic bronchitis and emphysema the conditions provided at Bournemouth by equable temperature humidity and pine-laden breezes were admirable. The treatment of bronchiectasis had passed into a more active stage in which the surgeon participated, but for the convalescent after his somewhat drastic handling Bournemouth could offer many advantages Heart diseases had been mentioned as an indication for treatment in the district, but the category should not include those with any suspicion of active rheumatic carditis The group called the diseases of civilisation—hyperthyroidism diabetes hypertension and peptic ulcer—were all becoming commoner with the increasing pace of civilisation To those might be added what Crile called neurocirculatory asthenia generally due to emotional causes operating through the sympathetic nervous system; this had been treated by denervating the adrenals which seemed like jamming on the brakes because the engine was running too hard He would prefer to change the environment and mode of life to quiet the engine down For all conditions where the kinetic drive of modern life had been too much for the individual he found reasons why a marine climate of the type provided at Bournemouth formed a useful and helpful part of treatment

Dr S WATSON SMITH reviewed the outstanding characteristics of marine resorts of the east and south coasts of Great Britain and said that the recommendation to be made to a patient depended much on the nature of the case As a rule the climate should be an equable one usually in a coastal town The medical profession now recognised that our own coastal resorts belonged to the most health giving in the world and that they could be used by the patient with greater likely benefit than any abroad It seemed logical that an invalid should find a climate akin to that of his native air preferable to any foreign one; in addition there were here no language difficulties no insuperable dietetic obstacles no overheated rooms no un English entertainments, no long tedious journeys there and back and no long distance separation from home and relatives Bournemouth could boast of a number of climates so that some choice might be made of the district for the patient whether near the centre of the town or in one of the several chines or in the north of the town or on the uplands behind. Plethoric people and those with high blood pressure did well in that relaxing climate (using the word relaxing in no derogatory sense but as meaning sedative) so did those with insomnia Rheumatic fever and acute articular rheumatism were practically unknown in the district, and this fact seemed a powerful argume establishing a hospital or home for rheumatic Rheumatoid and osteo arthritis were difficult to arrest in that climate other hand was best treated at a bladder was seldom met with disease of the kidneys or repeatedly found to benefit b

Dr A G S **Mahomed** suggested that the old medical classification of phlegmatic, sanguine, and other types might now be explained in terms of hormonal variations and might serve as a basis for explaining the different effects of climates on individuals

Hospitality

In the evening the Mayor of Bournemouth entertained the delegates to dinner at the Pavilion Dr W **Asten** proposed the health of the Association, saying that throughout its life it had been an advocate of British health resorts, not only in summer but all the year round He congratulated the Association on its handbook Marine climatology had been much neglected mostly because a sufficiently important place had not been found for it in the medical curriculum. Doubtless that error would be corrected when excessive interest in physical medicine, nutrition, and the vitamins waned He liked to think of the tripartite coöperation of the medical profession, local authorities, and the State, but it should stop at the point of federation He was sure that a complete State medical service was contrary to the country's ultimate welfare It might conceivably even intensify the amount of self drugging among the public, for mysticism and superstition still existed, on the other hand the medical profession sometimes took itself too seriously and its advice was disregarded with the result that the patient got on very well.

Sir **Walter Langdon Brown** replying, regretted the loss during the year of Colonel Elliot, he had been a good conjurer and his greatest feat had been to make the British public proud of its health resorts The attractions of foreign resorts were the three “W's” the weather, welcome, and wine Characteristically the foreigners advertised their good weather, the English only their bad Anyone receiving a better welcome than that of Bournemouth was lucky The wine cellar was certainly a difficulty, but the restrictions on currency abroad were much more irksome to him.

Sir **Archibald Weigall**, proposing the toast of the county borough of Bournemouth, said that legislation had never distinguished between pleasure and health resorts, the latter should be entitled to privileges by holding certificates from the Ministry of Health The tendency of the day was to pour out legislation for the local authorities to administer The measures unfortunately brought the rough and tumble of party politics into local affairs, he hoped the local authorities would not lose their individuality

The Mayor of Bournemouth, responding, said that the town's reputation had been built up as a place of health and recuperation from the earliest days The impression still lingered from past times that holidays were cheaper abroad. The Association had done much to tell the public that they could get as good and as cheap a holiday here as elsewhere Bournemouth hotels were as good as any He thought many went abroad to avoid the petty and irksome restrictions which amazingly existed in spite of democracy

The delegates made a tour of the town on the last day

Hospital Amalgamation at Bristol.—The governors of the Bristol Royal Infirmary have decided upon amalgamation with the Bristol General Hospital The amalgamation is, it is stated, unanimously supported by the committees of both hospitals

MEDICINE AND THE LAW

Motorist and Insulin

There were doubts on the law as well as on the facts in a case at Bow street police court last week. Charged with driving a car “while under the influence of drink to such an extent as to be incapable of having proper control,” a motorist said that his condition was due not to alcohol but to a double dose of insulin taken on an empty stomach The learned and experienced magistrate is reported to have remarked that it was clear that in the next Act of Parliament such people should be included with those under the influence of drink and unfit to drive But are they not already included? The words in the Road Traffic Act are “under the influence of drink or a drug” Is not insulin a drug? There is nothing in the Act to indicate that the drug must be an illegally administered narcotic The motive for taking the drug is immaterial, the Act is concerned merely to forbid motorists driving when they are not in a proper condition to drive The magistrate went on to state something of great importance “A motorist under the influence of an overdose of insulin is,” he said, “from the public point of view an equal danger to one under the influence of drink.” If so, we may infer that the police might have secured a conviction by charging the motorist with having taken a drug It is not the law which needs to be altered, but the form of the charge

The facts stated for the prosecution were that there had been a collision in Gerrard street The motorist was said to have turned out of Macclesfield street and to have collided with a stationary car A policeman said he found the motorist unsteady on his feet and smelling of alcohol, on the way to the police-station he became violent, when two policemen got him as far as Piccadilly he refused to go any farther and sat down in the road The police surgeon said that the accused told him he suffered from diabetes and had taken a double dose of insulin and had had no food. The witness agreed in cross examination that the effects of a strong dose of insulin would be light headedness, irritability, clumsiness in moving the limbs, and perspiration, persons in fact, who have taken alcohol and persons who have taken insulin exhibit certain common symptoms The magistrate observed that there must be some doubt whether the man's condition was due to alcohol or to insulin The case must therefore be dismissed The police, it would seem, in future cases of this kind will have to make up their minds whether to charge the taking of drink or the taking of a drug Whichever charge they select, they must be prepared with evidence to remove the doubt which last week was fatal to the prosecution

Negligence Alleged against Mental Hospitals Board

The protection which medical practitioners and others believed they had been granted by Section 16 of the Mental Treatment Act, 1930, has been invoked in vain by the Lancashire Mental Hospitals Board and two of its officers in a case which was taken to the Court of Appeal Mr and Mrs Holgate of St Anne's on Sea are plaintiffs in an action arising out of injuries inflicted on Mrs Holgate by a patient who was let out on licence from the Calderstones mental institution They allege that the board and the officers concerned acted without reasonable care in allowing the man to be at large Section 16 bars their claim unless they obtain the leave of the High Court; leave is not to be given unless the court is satisfied that there is substantial ground for the contention that the proposed defendants have acted in bad faith or without reasonable care The plaintiffs application for leave came before Mr Justice Talbot. One of their allegations is that the officer who ordered the release of the patient had no power to do so The judge granted leave and the three judges in the Court of Appeal have unanimously declined to interfere Lord Justice Greer observed that Mr Justice Talbot was right in holding that there was substantial ground for the contention that the defendants acted without reasonable care whether that contention will prevail at the trial I cannot say'

It will be recalled that Section 330 of the Lunacy Act of 1890 contained a weaker safeguard Persons responsible for the certification of a lunatic were not to be liable to civil or criminal proceedings if they had acted in good faith and with reasonable care: proceedings could be stopped by the court if the court was satisfied that there was no reasonable ground for alleging want of good faith or reasonable care. The startling results of the Harnett litigation and similar cases led to the change in 1930 whereby the burden was placed on the plaintiff in the terms already cited instead of it being for the defendant to invoke the safeguard by proving no reasonable ground' Section 16 of the 1930 Act has been of considerable value and the grant of leave thereunder has been rare The trial of the Holgate case will evidently be of considerable interest

VIENNA

(FROM OUR OWN CORRESPONDENT)

TULARÆMIA IN AUSTRIA

In a paper recently read before the Vienna Veterinary Society Prof David of the Veterinary University discussed the problem of tularæmia. This disease had become known in 1906 when after the great earthquake in San Francisco cases were observed which resembled plague and which were also noticed in animals especially rodents and wild rabbits In Austria the first case was reported in 1935 The chief symptoms were conjunctivitis and lymphadenitis and soon afterwards another case was observed in the eye clinic Both patients had handled diseased hares and jack rabbits Within the last four months over 200 cases have been reported from all parts of Austria the majority coming from a country district not far from Vienna Males were attacked much more often than females the ratio being 70 to 30 The cases differed in no way from those reported elsewhere There is an ulcero glandular type when infection occurs through contact with an infected rabbit or other infectious material and an ulcer appears on the finger or hand as the primary lesion, with enlarged gland In other rarer cases only glandular swelling is noticed often combined with conjunctivitis (the oculo glandular type) without the primary ulcer but the glands tend to break down later producing the secondary lesion It is not quite sure whether infection by insect bites has occurred in this country Treatment consists largely of rest good feeding surgical drainage of suppurating glands, and general symptomatic care In America a special anti tularense serum (Foshay's serum) has been used with apparently good results Laboratory tests show a specific agglutination which appears in the second or third week of the infection. The disease is followed by a lasting immunity It is very easily transmissible and highly infectious in spite of the rubber gloves overalls face covers and cellophane eyeglasses which are used in the laboratories one person assisting at a post mortem was infected recently in Vienna Prophylaxis necessitates the strictest cleanliness in handling living or dead rodents Animals found dead are to be regarded with extreme suspicion In view of the economic importance attached to this matter compulsory notification of all cases observed in man or animals is urged by Prof David.

A NEUROLOGIST HONOURED

A few days ago the eightieth birthday of that eminent authority on diseases of the brain and the nervous system Prof Wagner von Jauregg the discoverer of the malaria treatment of general paralysis of the insane was solemnly celebrated by the Austrian Society for Neurology and Psychiatry Representatives of the Government the University and of numerous learned societies at home and abroad were present and paid homage to the scientist who was himself prevented by ill health from attending. The president of the society Prof Otto Pötzl the successor to Wagner Jauregg as chief of the clinic described how just 50 years ago Wagner-Jauregg conceived the idea of artificial hyperpyrexial therapy having observed that an insane woman showed considerable improvement after an attack of erysipelas It took him 30 years before he could fully work out all the details of his method in 1917 It is interesting to note that in this instance the discovery had its origin in observation and experience the theoretical foundations having been laid down later by Hoff and Silberstein They showed that just the malaria infection produced an increase of the antisyphilitic qualities of the blood and brain tissues whilst typhoid or tuberculous infection which were also tried against syphilis gave no satisfaction Prof Pötzl also called the attention of the audience to the remarkable fact that the original strain of *Plasmodium malariæ* which Prof. Doerr had placed at Jauregg's disposal in 1917 was still alive and active after having undergone 481 passages through human hosts The study of its peculiar variations and alterations in itself was an important contribution to malarial research Prof. Pötzl went on to describe Wagner Jauregg's other great discovery which has largely contributed to the successful fight against goitre and cretinism in the Alps On Wagner-Jauregg's advice ordinary salt was charged with a minute quantity of iodine (1 mg per kg salt) and thus sold to the population of the districts in the Alps affected with hypothyroidism The results are most gratifying. It may be just mentioned that Wagner-Jauregg has been awarded the Nobel prize for medicine for his discovery of malarial therapy and a gold medal commemorating his work has been struck and presented to the Vienna Neurological Clinic which will henceforth be known as The Wagner Jauregg Clinic.

VON SCHRÖTTER'S CENTENARY

The second person whose work has recently been honoured by the celebration of his centenary is Prof Dr Leopold von Schrotter who died suddenly in 1908 He was an eminent scholar in materia medica but his chief importance for medicine and for Vienna was the fact that it was he who brought laryngology—then a new branch of medicine—to the level of a recognised specialty His efforts succeeded in instituting a special clinic for laryngology in Vienna, the first of its kind in the world. His genius and his splendid qualities as a research worker made him, entirely self taught in this work, a great authority on diseases of the larynx and trachea The other side of Schrötter's life work is connected with the fight against tuberculosis It was due chiefly to his incessant endeavours that the system of sanitorium treatment and open air therapy was introduced to the then existing Austrian Empire Tuberculosis of the respiratory organs at that time was termed here "morbus Viennensis" A statue of Schrötter, which has been placed in the Hall of Honour of the Vienna University, was unveiled on his centenary in the presence of the leaders of science and of the government

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month, his name can be seen later in the half yearly index

FROM A RUSTICATING PATHOLOGIST

IV

No one that I have asked has been able to tell me who invented the idea of tarring roads It was a very great discovery, worth a peerage and a fortune as well as the preservation of a name, as anyone knows who remembers what the dust nuisance was like just about 30 years ago, when you had to get off a bicycle after passing an automobile because you could not see and when main roads were bordered with empty houses in which no one would live if they could help it Knowing what we do about the delay between the beginning of an irritation and the appearance of a tumour in mule spinners and shale workers, it seems possible that this dust may have had something to do with the increased incidence of cancer of the lung in recent times, asking pardon of those who do not believe that there has been any increase Various things were tried, hygroscopic salts such as calcium chloride and so on, but tar was evidently the real solution, though it was not at first very popular because relatively few people had cars and many had dogs which enjoyed cleaning their feet on the drawing room carpet or the spare room bed Blatant utility is no royal road to fame as the improvements in medicine show I do not suppose that any drug has contributed much more to human happiness than aspirin, there are many which are more indispensable and do much more to save life, but from the consumers point of view there are very few that are of so much use to him in getting through the changes and chances of his life But I have no idea of the name of the man who brought it into use (which may of course be just ignorance) and Einstein is better known to the general body of people who eat it Nor is aspirin celebrated when orations are made about the progress of medicine There are I expect several reasons for this One is that while the patient wants chiefly to be comfortable, the doctor wants to make him well and keep him alive Another is that medicine always has been and still is a learned profession and discoveries are valued for being rational, for fitting into and extending the scheme of knowledge, as well as for being useful Banting's discovery of insulin was rational a dog without a pancreas has diabetes, if the duct is tied the secreting tissue disappears, the islands of Langerhans survive, and the dog does not have diabetes, therefore there must be something in the islands which prevents diabetes And it was so, though curiously enough the use of insulin has turned out to be empirical, for there is no agreement yet as to how it works Lister's discovery of antiseptic and aseptic surgery was thoroughly rational So is Rosenheim's mandelic acid the rational result of a deliberate search for a substitute for the oxybutyric acid of the ketogenic diet Liver for pernicious anæmia was partly rational and no more could be expected, since it was only by its use that the nature of the disease was revealed But aspirin is about as rational as sarsaparilla and it suffers in estimation accordingly

* * *

Our local paper has just published a reprint of its first issue, which came out on Jan 28th, 1837, to maintain "the real liberties of the People consistently with due reverence for the law the preservation of the unimpaired establishments of the Church, the maintenance of the just prerogatives of the Monarch, and of the privileges of the Hereditary Aristocracy of the land" Under such auspices one can hardly suspect the extraordinary value of Woodhouse's Balsam of Spermaceti or Pectoral Cough Drops, one dose of which, the advertisement says, will relieve "most affections of the chest and lungs in ten minutes" and as a guarantee of good faith "persons doubting the efficacy of this medicine may take a dose in the Proprietor's shop before they purchase" The balsam was peculiarly valuable for the prevailing epidemic of influenza which led to the ball at the Subscription Rooms being very thinly attended despite a sumptuous supper, and to "awful and horrid" scenes when attempts were made to bury several hundred people in a day in St Pancras graveyard I wish I could say that the paper also records an exceptional mortality among the local polecats but nothing so interesting can be found, and the cause of the epidemic is held to be "no mystery" since it was plainly due to a sudden change in the atmosphere "from great dryness to great humidity, both states being accompanied with a severe depression of temperature" But how proud Mr Decimus Woodhouse must have been to have a pectoral cough drop which would cure it in ten minutes—if only the public would take it Does the recipe still survive? For we still lack such a certain cure

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Nor do we yet know how an influenza epidemic comes about The definition of the virus which has an ætiological relationship to the disease has given us a great deal of pleasure—æsthetic pleasure at a particularly elegant piece of work and carnal pleasure at the prospect of a vaccine—but it has introduced great complications into the epidemiological problem To relate epidemics to the weather and the seasons as such had a stately simplicity about it which was and still is attractive, and the necessary sensationalism was to be had out of earthquakes and other paroxysms of nature If children's diarrhœa began to be serious when the 4 ft earth temperature had reached a certain level—well there it was, a delicious piece of information for the curious and singularly deterrent to any practical action. When Dr Johnson and Mr Boswell went to the Hebrides they heard a good deal about the boat cold at St. Kilda Johnson thought the whole thing was a sham and that the islanders went on coughing because they did not like visitors and did not want to talk. How mysterious it must all have seemed in 1773 and how satisfying the explanation that it was not the arrival of the boat at all which caused the catarrh but the north-east wind which was necessary for the trip from the mainland. But the parasitologists have changed all that We now have two sets of facts—the relation of epidemics to the weather and the season of the year (which are not necessarily the same thing) and their relation to the complicated interaction between the host (with its varying susceptibility and resistance) and the parasite (with its varying virulence and infectivity) Only for plague do we seem to have anything like a complete account Human plague depends on the abundance and activity of the fleas which transfer it from rat to man and it ceases when these are sufficiently depressed by the weather—by dry hot weather in India by a cold winter in England A green Christmas means a full churchyard may perhaps be a reminiscence of the disease which was for more than 300 years a major cause of death in this country In some other diseases—e g diphtheria—the host-parasite interaction is fairly well understood but the new discoveries have not yet been fitted on to the old facts that they are seasonal afflictions On the whole it seems likely that the immunity of the host is about the most cogent factor and that the spacing of epidemics may be determined by the accumulation of susceptible individuals either by birth (as in measles) or by the lapse of acquired immunity (as perhaps in influenza) But those who have had the luck to have been trapped into reading Creighton s History of Epidemics in Britain will know that there are other sides to the whole question. It is indeed a good thing that he was a heretic and did not believe that bacteria were the cause of disease but it would be better if someone who does believe in them could imitate his industry and scholarship and write a new edition; I wonder if the obvious man is doing it It would be something if we could know how much truth there is in the conclusion which was so clear in 1837 that cold wet weather causes an epidemic of influenza there are masses of modern data waiting to be analysed.

* * *

Which brings us by a natural drift of gossip to pass a word or two about the healthiness of different places and their climates When Cæsar landed in Britain he found civilisation at its brightest in the south-east, and it is the same to day And it is difficult to think that climate has had nothing to do with that amazing aggregation of 7 or 8 million people living closely packed together in the London area and leading healthy I hope happy and certainly productive lives The London climate is indeed exhilarating physically intellectually and spiritually and as usual it is impossible to disentangle body mind and spirit which all work together for healthiness, backed up as they are by a very efficient public health service In the summer it is about the hottest place in England and in the winter as cold as anywhere which is probably good for us though the excellence of its air depends chiefly on its being dry so that our skins evaporate quickly and keep cool. Going to the west is equivalent to putting on a rubber mackintosh and human vitality deteriorates as is seen in the relatively high death rates of purely rural areas in Cumberland Westmorland, West Wales, and the south west: Devon they say is no good to anyone between 4 and 40 In Cæsar's time the people in these places were probably still in the Stone Age and it is still true that the districts which are blessed with a good supply of really soft water to shave with lag behind the south-east in the maturation of human qualities The effect of damp air is of course like all environmental factors relative to the material on which it works. On any rational scheme Lancashire ought to be a very inferior place there are more people than in the London area (though not so tightly packed) and the climate is horrid especially in the summer That the inhabitants are what they are and do what they do can be due only to their almost preternatural qualities it is one of my few quarrels with fate that I was not born a Manchester quaker Apart from rheumatism for which all neighbourhoods are bad, places differ among themselves a great deal, and what surprises us is that people go on living in bad places when better districts are available As William James says, it is of course inherent in man to prefer life on any terms to no life at all but that is not actually the alternative offered to those who inhabit Central Asia Tierra del Fuego Arctic Canada and even Orkney which has, so the returns show 79 gales per annum or Derby where the sun seldom shines Emigration there has been in plenty but seldom depopulation The truth seems to be that most people, irrational as they are and ought to be, prefer the place they are used to and the mode of life which goes with it The locality for which they have the feeling that it is their own is for them the best which is perhaps why no author of a guide book can help turning his account into an argument that the district he is writing about is actually God s own country Mark Rutherford is exceptionally honest; when he is trying to make the best of Bunyan s country he can get no further than it has a wide sky and it is quiet, which naturally makes everyone want to go to Elstow and have a look at it

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Amongst all the progress of medicine which has marked the 100 years of the local *Standard* the belief in the curative qualities of air seems to have declined and dying men have given up gadding about as they used to Knowledge of the world has shown that man can live very nearly anywhere without being very much altered; the north and south poles and the top of Everest seem to be just within or just outside his capacity Hence the view that how a man lives is more important than where he lives which is one of those improvements which have come from a better appreciation of the general nature of diseases. There has been a decline of the mystical view that a disease is something imposed on the body for which somewhere in the world a herb a stone an atmosphere or what not is to be found and with this a rise in the pathological outlook which sees that the body always tries and generally succeeds in curing itself and that a great deal may be done in helping incurably lame dogs over degenerative stiles. It seems to me as a patient who has spent a good deal of time in post mortem rooms that the improvements in diagnosis and treatment in my own time have also been very great though not I imagine any more than in other branches of human activity or in the preceding medical generation the patient now has a much better time than he used to have when there was no antitoxin for diphtheria and no anæsthetics for tooth drawing (at any rate for children) The whole business now is far more rational than it was, and the concentrated object of medical research is to make diagnosis and treatment a logical science But perfection in this aim is and will be as elusive as Major Road, and, speaking as a grateful patient, I was rather shocked to read in THE LANCET the other day that the conservator of the Hunterian Museum thought that the student should be well trained in the experimental method because he would find when he came to clinical work that diagnosis was conducted in the same way in Dr Beattie's Garden of Eden clinical data "when properly correlated and analysed according to the rules of the experimental method, lead to a conclusion as scientific as those of the investigator in a physiological laboratory" This is either bad experiment or bad medicine If an experimenter wants to find out what 2 and 3 add up to, it is obligatory on him to be sure that what he thinks is 2 really is 2, and that what seems to be 3 actually is 3 until he can be certain on these points it is entirely illegitimate for him to draw any conclusion about their sum if he cannot reach surety he must put the matter aside and tackle something else or take a holiday It has always seemed to me that the great trouble of the doctor is that he has to do sums with numbers which are often very uncertain and his great pride that he usually gets the answer somewhere near right If he failed to come to a conclusion adequate for action, he would be a bad doctor, if he drew a conclusion from such froward data he would be a worthless experimenter And, again as a patient, I judge that his first business is to be a doctor The clinician is indeed in the same predicament as Johnson was over his dictionary "to deliberate whenever I doubted, to inquire whenever I was ignorant, would have protracted the undertaking without end and perhaps without much improvement" And both parties have extricated themselves pretty well · to cure a patient without knowing what is the matter with him is no mean performance

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Only in one particular does medical practice seem to have deteriorated The layman now takes more interest in and knows more about technical details, and he has become more critical correspondingly the doctor has put off some of his authority with his priestly vestments It is all to the good that the doctor should wear a soft hat, and the maintenance of good health, if not the cure of disease, is better attained by intelligent coöperation than by arbitrary rules indeed the whole sanitary progress of this country, from Chadwick and Simon onwards, has been achieved by inviting the public to behave in a common sense way rather than by orders from Whitehall. But with this gain there has also been some loss of confidence which is of no help to the patient One of the greatest—perhaps actually the greatest—service which a doctor can give to a sick man is to relieve him of all responsibility about his own conduct, and there is no more satisfactory asylum than a hospital bed. There is no more worry about what he shall eat or what he shall drink or wherewithal he shall clothe himself he is dressed and washed and fed *p r n*, nor need he concern himself about what is the queer tasting stuff he has out of a small glass, it may be nothing more than ritual but that does not matter That this resignation, this resumption of a baby's position, helps him to get well is simply a matter of experience which at the moment I need not try to explain Many of my friends are qualified, and I notice that the ones who are too intelligent about their own maladies and cannot forget themselves far enough to believe in a bottle of medicine, do not make the best progress when they are ill What they need is childlike faith (which is very far from being childish), and if they would only take advantage of their chance to retire for a while from this troubled world they might put it to good use Was not "Blood Pictures" written in hospital and did not Mark Clark learn all fours in a whitlow?

PANEL AND CONTRACT PRACTICE

Capitation Fee for Adolescents

ON March 11th Sir Kingsley Wood, the Minister of Health, who was accompanied by Mr Scrymgeour Wedderburn, the Parliamentary Under Secretary for Scotland, received a deputation from the British Medical Association, when Dr H Guy Dain urged that the fees paid to medical practitioners under the national health insurance scheme should be increased, and that the fee should apply not only to the present insured persons but also to the juvenile workers for whom the Government had announced their intention of providing medical benefit The deputation suggested that as on former occasions the matter should be referred to arbitration Sir Kingsley Wood said that he considered that a flat rate substantially below the present figure could well be justified

Replying to a question in the House of Commons four days later Mr Hudson, parliamentary secretary to the Ministry, said that the whole matter was to be referred to an independent court of inquiry

Medical Insurance Practice

London insurance committee is to spend £200 in issuing to each practitioner in its area a copy of "Medical Insurance Practice,' to which we referred *recently* In the report of the subcommittee which *recommended this action is a list of documents* issued to practitioners joining the medical list These include the medical benefit regulations, the National Formulary, the drug tariff, specimens of nine different forms, five memoranda on various subjects, a requisition form for stationery—in all 32 items, apart from the terms of service and the allocation and distribution schemes This avalanche of literature, primarily intended for the practitioner's *instruction* in the way to carry out his contract with the committee, is accompanied by no guide or index The subcommittee has visualised the perplexity of a practitioner new to insurance work, about which document he should *consult in relation to* a particular urgent problem with which he is faced

An Inadvertent Overcharge

An insured woman gave up work on marriage Shortly afterwards, in January, 1936, she needed treatment, and being under the impression that she was no longer entitled to it she did not, in applying for her doctor's services, represent herself to be an insured person She told the doctor, in fact that she had ceased insurance Towards the end of the year she again became ill and *obtained further* treatment as a private patient, paying an account amount in all to £1 In December, 1936, she received a notification from the insurance committee that her title to medical benefit did not terminate until the end of 1936 and realising her mistake she promptly applied for a refund of what she had paid Clearly *this was a case of genuine misapprehension as to the* insurance status of the patient —a misapprehension largely brought about by the insured woman herself assisted perhaps by the practitioner's omission to verify the removal of the woman's name from his list. Under Clause 7 (3) as it now stands the insurance committee can adjust the matter by *repaying the £1 to the insured person and deducting* it from the doctor's remuneration But the doctor will be the poorer by the value of the medicines he supplied

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CORRESPONDENCE

THE OVER TREATMENT OF GONORRHŒA

To the Editor of THE LANCET

"So they do nothing tis a venial slip —(*Othello* IV 1, 9)

SIR,—Modern methods of dealing with gonorrhœa in the male seem to be strangely opposed to the fundamental principles of treatment for other diseases It is some time now since as registrar *at the London Lock Hospital, I had large experience* of this condition As surgeon in charge of the genito urinary department of a teaching hospital I see it rarely for gonorrhœa has been withdrawn from the circle of hospital life and wedded to syphilis (an unhappy and incompatible match) and they live apart in a dark and uncritical world of their own

It is a common observation that acute urethritis subsides as rapidly as does acute catarrhal rhinitis if the patient do nothing but lie in bed Unfortunately social custom demands that gonorrhœa should be an ambulatory disease and this excellent treatment is seldom practicable When such rest cannot be given it is surely all the more illogical to irritate the inflamed mucosa by the active measures *so frequently employed It is an axiom that anti*septics cannot destroy gonococci in the urethra without damage to its lining membrane. Gentle irrigation with a mild solution washing pus out of the anterior urethra does no harm Frequently however it seems that posterior irrigation is employed from the start of the disease—an illogical procedure which unless carried out very efficiently is dangerous It is for most patients a difficult art and for some an impossible one to acquire In a recent case, as often before I have seen it responsible for an acute spread to the posterior urethra and an epididymo-orchitis. During the acute stage of posterior urethritis bladder irrigation is fortunately too painful to be possible In chronic stages of the disease when the posterior urethra is *already infected filling* and emptying the bladder from without with an antiseptic is more venial but I think compares unfavourably in efficiency and safety with the passage of large quantities of urine

Much misdirected energy is also devoted to massaging the anterior urethra and the prostate gland This form of treatment seems to be carried out too early too often and sometimes too violently When active inflammation has subsided and mucous collections are present in Littre's glands, prostatic ducts or vesiculæ seminales the occasional use of massage is probably beneficial Employed earlier in the disease it must be harmful or all our teaching of first principles is wrong Employed frequently (daily or even twice daily massage over a period of weeks is not uncommon !) it produces a traumatic irritation Some authorities demand that as a criterion of cure the urine should contain no pus cells even after vigorous massage of the anterior urethra and prostate gland on a full-sized bladder sound This seems to me a queer test of normality Surely no urethra unless tanned and lethargic from months of active treatment would fail to respond in the natural way to a traumatic irritation of this severity by the extrusion of a few pus cells The following case shows the futility of indiscriminate massage

A patient seen recently was having regular massage for old-standing prostatitis. He consulted me on account of painful micturition and slight hæmaturia which accompanied the treatment I found the urinary passages normal, except for calculi in the prostatic gland !

A second case is eloquent of over treatment

A patient with a first attack of gonorrhœa consulted me two months after the onset Bladder irrigation had been attempted unsuccessfully twice a day from the start until a left epididymo-orchitis was achieved three and a half weeks later After an interval of a fortnight bladder irrigation was again instituted and combined with prostatic and anterior massage on a sound every day In addition, four injections (? vaccines) were given each week After a month of this treatment a smear from the urethra still contained gonococci—and no wonder !

In other coccal invasions we tend more and more to discount energetic local measures and try instead to build up the patient's resistance Occasionally we effect a cure by extirpating a focus, as in early appendicitis but otherwise we help the patient to recover The gonorrhœal patient demands cure more urgently than most and we seem to have taught him to believe that this can only be achieved by assiduous and unpleasant manœuvres. Is the gonococcus an organism with unique behaviour or is its treatment determined by fear and ignorance on the one part, and lucrative credulity on the other ? Present methods unfortunately not only lack the corrective of general hospital practice but indeed are encouraged by a municipality which allots its monetary grants to the various units in proportion not to the number of patients treated but to the total number of individual attendances in each department in the course of a year

Surely a premium on over treatment !

I am Sir yours faithfully

M F NICHOLLS

Queen Anne-street W., March 15th

A CIVILIAN AMBULANCE SERVICE

To the Editor of THE LANCET

SIR,—While the Home Office and local authorities debate and mature their plans for the protection of the civilian population in the event of war and aerial attack while doctors and policemen are given instruction in anti gas measures and moneys are voted for the expansion of fire brigades we seem to hear comparatively little discussion of arrangements for the collection sorting evacuation and treatment of the numerous civilian casualties which must we know be visualised as occurring in spite of all these measures

The lessons of the last war and of Madrid with their small scale raids have at least given us some measure of what we may some day have to anticipate and we have reason to believe that gas and incendiary bombs may now be added to high explosive One or two large scale raids might easily fill all the hospitals of a city to overflowing City hospitals themselves might not escape damage It is evident that, in addition to aid posts and clearing stations, large fleets of ambulances would be needed and that a circle of schools and other suitable buildings well beyond the outskirts of exposed towns would have to be equipped as hospitals to receive the casualties

There are many medical men in this country who will be unwilling, for conscientious reasons, to serve with the armed forces in any future war There are also thousands of men of military age who will refuse to fight or make munitions Remembering the fine service given by the Friends' Ambulance Unit and the British Red Cross Society during the last war on behalf of sick and injured civilians, should we not be turning our thoughts to the provision of an adequate medical service for our own civilian population in the event of the attack which we hope will never come? Such a service would incidentally provide urgent and essential humanitarian tasks for numerous volunteers who might be unable or unwilling to serve with the armed forces in any way For London alone an efficient organisation would require an army of able bodied ambulance drivers, stretcher bearers, and orderlies

There would be no lack of doctors and nurses with experience, both clinical and administrative, gained in the last war, and it should be possible for these, in coöperation with the Quakers, the Red Cross, and St John Ambulance, and with or without the help of the Government or the municipalities, to organise an efficient scheme Such a scheme would be in the national interest At the same time it is not inconsistent with pacific endeavour to envisage alternative forms of humane assistance in the event of war While making provision for stricken men, women, and children, such an organisation would help to disarm bitterness and avert a vast amount of unhappiness in connexion with conscientious refusal to give military service

I am, Sir, yours faithfully,

Cambridge March 11th JOHN A RYLE

MORE AND SAFER MILK

To the Editor of THE LANCET

SIR,—In a recent issue (Feb 13th) Dr Esther Carling quoted the words of the Minister of Health "The more the consumption of milk is increased the more important does it become to secure the safety of the supply," and went on to suggest that it is the business of the medical practitioner to coöperate with the health authorities to ensure the prevention of milk borne disease Although agreeing with Dr Carling's suggestion, I doubt if many practitioners know how the milk trade is carried on in a rural area or if they realise the many difficulties met with in the production of a first-class supply Let me describe the methods of production and supply in the small area of the agricultural county in which I practise

A Milk Distributing Depôt—There has recently been established in the neighbouring small industrial town a milk depôt, to which milk is brought by lorries in churns from many of the surrounding farms A sample of the milk is tested and the remainder is strained, pasteurised, and dispatched to London in clean churns Some of the milk is kept to separate into cream and for the making of butter Broadly speaking none of the milk, cream or butter is consumed locally This depôt is well organised

A Large Scale Farmer—A farmer who has several hundred head of cattle deals directly with London through his bailiff, in his case the milk is only chilled From time to time his herd of cattle is inspected for tuberculosis. The standard of efficient organisation there is poor In a similar fashion another farmer collects and distributes his milk to the city of Oxford

A Small Scale Farmer—An extremely industrious and hard working couple have about fifty head of tuberculin tested cattle, with the help of one assistant they run the farm and distribute the milk themselves The milk is chilled and delivered by a small motor van, twice daily to the inhabitants of the small local town This small concern is exceedingly well run, and it seems a pity that most of the profits are swallowed up in bad debts

A Milk Collector and Purveyor—Two men collect all the milk produced by a local farmer from a herd of tuberculin tested cattle The milk is chilled and is taken out on a morning and evening round in churns by a horse-drawn milk float These men are tireless workers, spending their entire lives collecting and distributing milk locally In spite of their labours they find it difficult to make a living owing to the usual bad debts and the comparatively small amount of milk consumed by the average rural and small town householder

Milk Shop Purveyors—There is a shop in the small town to which all milk is brought in churns by rail from the nearest large town and is bottled on the premises A second purveyor has all his milk brought from London by rail daily, he is one of the few men who sells tuberculin tested milk

Other Sources—One or two queer old men drive about from village to village in decrepit horse drawn carts On the tail board reposes a remarkably battered looking churn filled with milk from local farms This they retail in surrounding villages

There are some interesting points about these arrangements It is, for instance surprising that a large number of consumers in the country obtain their milk from London or from one of the large towns, even when the source of supply is almost at their door The milk thus obtained is usually better prepared but must lack something in freshness, as is proved by the frequency with which it goes sour in summer It is also surprising that the consumption per head of the population is so small, a delivery of one to one and a half pints being the usual daily order for a family of two adults and three children (not infants) Free milk is distributed at the senior school in the town but not at the junior school Some of the village schools also provide free milk, although the mothers often object as they consider it "takes the child off his food at dinner time"

On questioning the producer farmers about the Milk Marketing Board and its effect on their trade one generally hears the black side of the financial position and one cannot but realise that milk is produced at about the lowest possible figure consistent with making a reasonable living The collector and the purveyor tell the same story, and no one who has had the opportunity of studying them at close quarters can fail to recognise how extremely hard they have to work A seven day week is inevitable with no holidays, not even Christmas day off My own experience shows that their health suffers as the result of this perpetual strain

Before one can fairly talk about "more and safer milk," or insist that the further improvement in the milk supply is the duty of medical practitioners, we must take an unbiased view of the difficulties of the field worker striving to make a living out of the milk trade Personally I fail to see how we can expect further improvement without readjustment in the financial balance between producer, retailer, and customer Exactly how this can take place is the real problem Can it be effected by or through the Milk Marketing Board or must the consumer pay for and probably consume less of a safer cleaner milk ?

The present-day farmer or retailer as I know him is a knowledgeable man and is fully aware of the need for cleaner milk and of the methods for obtaining it but he simply cannot bear the expense of these methods unless he is a philanthropist or is prepared to go into the bankruptcy court

I am Sir yours faithfully

March 15th LIEUT -COL. I M S (retd)

INFLUENCE OF SCHOOL ROUTINE ON GROWTH AND HEALTH

To the Editor of THE LANCET

SIR,—The interesting article by Mr John Allan in your last issue bears out the conclusions reached from a research carried out by the National Council for Mental Hygiène in 1931 which were embodied in a pamphlet entitled School Life and Nervous Instability published by the council

Thirty nine schools of every type covering the ages from 5 to 18 and with a total population of 10 125 children were approached with a view to finding out the effects of the conditions of school life on the physical and mental health and development It was found that the maximum period of strain occurred during adolescence and that retardation in growth as evidenced by height and weight tended to occur during the summer term especially when examinations and school sports added to the child s burden This period also appeared to coincide with an increase in punishments, which may also be regarded as evidence of an increase of emotional instability in the children and possibly in the teachers The returns appear to show two periods of maximum instability one occurring at puberty and one between 16 and 17

Evidently a careful recording of height and weight is extremely important and we agree with Mr Allan that it is a matter for regret that the Board of Education medical authorities are basing their estimates of nutritional states on clinical observations only without regard to the standards of height and weight for age

The whole question of the school curriculum as regards both work and play in relation to the growing child requires much more attention than it has hitherto received since damage done during the years of growth and especially between the years of 12 and 18 can never be retrieved

We are Sir yours faithfully

DORIS M ODLUM
GEORGE SOMERVILLE
Joint Honorary Secretaries, National Council for Mental Hygiene

Chandos House Palmer street London S W
March 10th

NITROUS OXIDE ANALGESIA IN OBSTETRICS

To the Editor of THE LANCET

SIR —I read the paper in your last issue by Dr Chassar Moir with much interest For some years before gas and air machines were introduced I made use of pure nitrous oxide gas during labour with satisfactory results and in a letter to your columns (*Lancet* 1931 2 427) I described a simple light, portable apparatus with reducing valve automatic filling valves for the bag and a self administering stop cock Dr Ivan Magill and Messrs Charles King Co Ltd had helped me to construct it

The apparatus described by Dr Chassar Moir is an improvement on this as it could be entrusted to midwives A self-administering stop-cock was awkward The new face-piece with expiratory valve is much more convenient for patients

I am Sir yours faithfully

Plymouth March 14th JAMES RIDDELL.

FACING THE DIPHTHERIA PROBLEM

To the Editor of THE LANCET

SIR —In the reference to the initiation of diphtheria immunisation at Markfield in your last issue (p 664) there is one slight inaccuracy It is stated that I and the doctors associated with me considered 50 per cent. of consents would be sufficiently high to prevent epidemic prevalence. What I actually stated was that anything under 50 per cent would probably render the procedure not worth attempting This of course is a very different thing

You will, I am sure be glad to know that we have succeeded in immunising about 90 per cent of the children and to have accomplished this in a large industrial village in Leicestershire the Mecca of the antivaccinationists is I submit a remarkable achievement

I am Sir yours faithfully

T W GORDON KELLY
March 1 th M.O H Market Bosworth Rural District.

ANOREXIA NERVOSA

To the Editor of THE LANCET

SIR —Dr Sheldon s article in your issue of Feb 13th and the comment by Sir Walter Langdon Brown Dr William Sargant and Dr W S Maclay are of extreme interest and show a serious effort by the medical profession to remove further the stigma of neurosis from patients presenting evidence of a major metabolic breakdown That such metabolic disorders can be of endocrine origin because of a metabolic control possessed by the anterior pituitary gland has been indicated by Dr Sheldon Recent experiences with two fatal cases both of which presented the clinical features of anorexia nervosa clearly indicate the seriousness with which some of these cases must be viewed.

Both cases suddenly developed coma which lasted about 30 hours in spite of hypoglycæmia therapy and was terminal In both cases the level of blood-sugar in coma was 20 mg per 100 c cm of blood Administration of intravenous glucose and adrenaline failed to rouse these patients beyond a semi-stuporous state and the maximal rise of blood-sugar under therapy was below 60 mg per 100 c cm of blood The post mortem in the female aged 24 diagnosed Simmonds s disease (anorexia nervosa however had been the diagnosis for the past five years) showed atrophy of the pituitary and an enlarged pancreas Prof Rasmussen studied the pituitary gland and reported atrophy in size and weight to 50 per cent of normal and microscopically extensive atrophy and degeneration of the anterior lobe

The second case a female aged 56 was admitted in coma and presented the typical appearance of anorexia nervosa The post mortem revealed a normal pituitary gland macroscopically and on cross section a normal size pancreas and extensive macroscopic hæmorrhage in both adrenal glands The microscopic study of the adrenal showed practical destruction of all cortex tissue by hæmorrhage The pituitary gland was not studied microscopically because it was mislaid by an attendant

The sudden terminal events in two out of my seven cases presenting the clinical type Simmonds s disease or anorexia nervosa syndrome indicate to me that one must be very careful to understand the vague symptoms of hypoglycæmia for they can be assigned to a neurotic background. Later investigation of my two fatal cases established the fact that both individuals had experienced the neurotic and psychic symptomatology of hypoglycæmia for five years preceding the fatal attack Sir Walter Langdon Brown has indicated the vagaries of blood sugar studies We have much to learn concerning blood sugar in the human, as indicated by Goldzieher (*Endocrinology*, 1936, 20, 86) demonstrating six types of sugar tolerance curves in endocrine cases with a hypoglycæmic syndrome

A small series of patients administered Collip's adrenotropic factor indicate the possible rôle of this substance in blood sugar control One patient has had a plateau type of sugar-tolerance curve, determinations made six months apart, with corresponding symptomatology Following the administration of 1 c cm of Adrenotropic Hormone (Collip) three times a week, a pre diabetic sugar curve and glycosuria (first- and third hour specimens) appeared

I share the hope with other of your correspondents that critical studies, as suggested by Dr Sheldon, of these cases will be made before the "neuro" tag is wired on a possible medical casualty

I am, Sir, yours faithfully,
CHARLES W DUNN
Philadelphia, March 3rd

ON THE TAKING OF CHILDREN'S TEMPERATURES

To the Editor of THE LANCET

SIR,—*There are three ways of taking the temperature* in the mouth, in the rectum, and in the axilla or groin Each method has its own special advantages and advocates Personally, I suggest that taking the temperature in the groin or axilla is the soundest and safest method

The advantage of the rectal method is that in tiny infants it is quick and easy There is no danger of breaking the thermometer The disadvantage is that it is one degree higher than the normal, and once the nurse or mother has seen the thermometer register at 99 4°, no amount of argument can make her feel that the temperature really is normal. She has a subconscious feeling that the child must be ill. Another very real disadvantage is that when a tiny infant's temperature is taken rectally several times daily, the thermometer acts as a stimulus to the anus, just as a soap stick or tip of the little finger would in a constipated infant, so that after the removal of the thermometer the infant tends to pass a motion, and diarrhœa can actually be provoked in an infant by frequently taking the rectal temperature Last, and not least, infections may be transferred from one child to another, or from outside sources, into the anus, and strong antiseptic solutions, unless carefully wiped off, may actually do considerable damage Everything taken into consideration, the habit of taking the temperature of infants and young children rectally is to be deprecated

Taking the temperature by mouth is impossible in the tiny infant with any degree of safety, but in the older child it has the advantage of being quick and accurate On the other hand, the danger of the child biting the thermometer is a very real one There is also a very real risk of transferring infection from child to child, or from adult to child, depending on who last used the thermometer, antiseptics may not be efficient in sterilising the thermometer after use Taking children's temperatures by mouth is not in my opinion, to be recommended

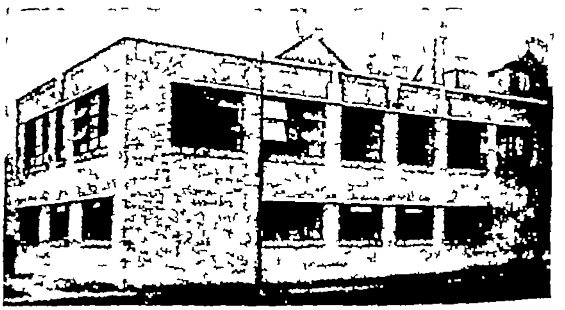
The axillary or groin temperature is the method of choice, although it takes longer The thermometer should be left in place for five full minutes, and tends, when the child is healthy, to be perhaps half a degree too low When a child is ill for any reason, the skin temperature as a rule approximates to the mouth and rectal temperature to within two tenths of a degree This is a negligible error No infection can be conveyed in this fashion The infant can be held on the mother's or nurse's knee, with the thermometer tucked into the groin or under the arm, and it can be nursed until the thermometer is read In older children who are lying in bed it is easily placed in position The risk of breaking the thermometer, in my experience, is very small, and altogether this method is preferable Psychologically, the effect of taking the skin temperature, rather than the mouth or rectal temperature, and finding it on the low rather than the high side in health, is of great advantage, and the over anxious mother or nurse can feel quite happy and sure that the child has no fever

I am, Sir, yours faithfully,
DONALD PATERSON
Devonshire place, W , March 16th

MARIE CURIE HOSPITAL

HELEN CHAMBERS RESEARCH LABORATORIES

THE new building which Queen Mary is opening to day, Friday, at the Marie Curie Hospital is situated between the two existing blocks of the hospital to which it has direct access by means of covered ways The laboratories which occupy its upper storey have been planned to afford facilities for carrying out the routine pathology of the hospital as well as for the development of work in cancer research, with particular regard to the experimental approach One laboratory is equipped for routine clinical pathology and histology Separate rooms are provided for bacteriology and for biochemistry Two rooms are equipped to house animals for work in experimental pathology and the pathologist's private room is also fitted as a research laboratory A sterilisation room and a room for the preparation of media and a mess room for the technical assistants complete the unit, which is in charge of Dr Mary Gilmour under the general direction of Dr Elizabeth Hurdon



KEIGHLEY VICTORIA HOSPITAL —It is proposed to build a new operating unit, with two theatres, and a block of five children s wards at the south west corner of this hospital It is estimated the extension will cost about £15,000

OBITUARY

FREDERICK WILLIAM ALEXANDER O B.E M.R C.S Eng , L.R C.P L.M Edin D.P.H

Dr Frederick Alexander who died on March 14th at his home in Teddington was widely known for sanitary labours and his keen interest in many questions of public health. He entered St Bartholomew's Hospital as a medical student in 1877 and qualified as M.R C S Eng in 1881 taking the Edinburgh diplomas later After qualification he served for a term as a surgeon on H.M S *Dunkeld*; later he was assistant medical officer at the Mile End road Infirmary and was then appointed medical officer of health to the borough of Poplar a post which he filled with conspicuous success for 34 years gaining well deserved popularity for his close attention to public welfare A careful executive officer he made special reports on the prevalence in his dispensation of infectious diseases and made close inquiry into the quality and value of different foodstuffs and into the purity of many substances in common use, cosmetics, and tobacco He wrote on these subjects forcibly He came into prominent notice by his insistence upon the danger consequent on the uncleanliness of the water in public baths He instituted at Poplar an electrolytic disinfectant plant for the purification of the swimming bath water an innovation which subjected him to considerable criticism. But there is no doubt that he was a pioneer in the movement which led to the interference of the Ministry of Health and the laying down of regulations for ensuring that the water in public baths should be kept pure in accordance with scientific direction His interest in the baths led him to the invention of an ingenious device for teaching the young to swim The occurrence of an epidemic of small pox during his term of office led to particular attention to the prevention of blindness among the infant patients, while special reports issued by him on the relationship of vitamins to foodstuffs and on artificial light treatment showed his resolution to keep abreast of modern therapeutics On his retirement from office he received the O B F

About ten years ago he went to live at Teddington, where he continued to manifest his wide interest in practical hygiene while he made a special study of the needs of the blind devoting to the subject much time and attention He made useful innovations in the methods of instruction in Braille characters which enabled the sighted instructor to more readily instruct the students, and he constructed models for teaching the blind the elements of electricity and magnetism He was a skilled mechanician and he adapted a large number of games and puzzles in such a way that they became practical recreations for the blind; models of these were reproduced in large numbers through the voluntary coöperation of amateur woodworkers and the results were distributed free of charge

Dr Alexander was a very able and energetic man. His inspiration throughout a full and active life was always the same—to be of service to his fellows He had reached his 78th birthday a few weeks before his death

EDWIN JAMES WENYON M.B B.Sc Lond

Dr Edwin Wenyon who died on Feb 20th after little more than a day s illness at the age of 84 had practised in Dundee for 30 years As a student first in Edinburgh then in London he had a brilliant career His London B.A was followed by the B Sc. degree with honours in experimental physics He won the science entrance scholarship to Guy s Hospital and the Sands Cox exhibition in physiology In the second M.B examination he was awarded the gold medal in anatomy and honours in physiology After serving as house surgeon at Guy's and some experience at the Rotunda, Dublin he went as officer of health to the Orkneys, For a brief term only he said but the wild islands of the North laid their spell on him and many years passed before he came away He then spent a short time in his native county of Staffordshire and settled finally in Dundee His interests were many and diverse A wide reader in his own language in French and German he was a capable and vivid critic of men and events the world over In his earlier days farming and agricultural chemistry attracted him he found time to grow melons and black oats and carnations He was the first in the Orkney Islands to succeed in growing strawberries in the open air At one time he had a fernery in which was a specimen of every British fern. Riding was for many years a favourite exercise; he broke in himself several horses for his own use He was also a great walker and keen fisherman. A true lover of Nature the familiar open two-seater in which he made his rounds was a proof of his inveterate love of the open air In his prime he could defy any challenger at chess

No hobby or sport however roused in him such absorbing interest as did children—well or ill. He waged constant war on errors of diet whether the result of ignorance carelessness, or poverty Associated with a wide experience and clinical skill were other qualities which gave to this man of undoubted genius a remarkable and lovable personality His unfailing kindliness his cheerfulness and gaiety of mien radiated hope and courage As one of his friends has said To a multitude of young and old he was more than their doctor he was their understanding friend His quick yet kindly wit made him in any company a dominant personality He revelled in a grand argument, and with his elder brother the late Dr Charles Wenyon had many an intellectual battle A tale is told of Edwin Wenyon in the heat of argument tearing off his coat and shouting to his brother keep cool In his long life he had his full share of trouble but with an incorrigible optimism he refused to worry, and at 84 retained the unlined countenance of a much younger man while his eyes never lost their whimsical suggestion of the fun there might be in living.

He leaves a widow and of his thirteen children ten three sons and seven daughters survive him The eldest son is head chemist with Imperial Chemical Industries Ltd Huddersfield Another son Dr Edwin J Meredith Wenyon has been with his father in Dundee for six years and will carry on the practice

JOHN LIDDELL M D Edin

Dr John Liddell who died on Feb 28th after a brief illness while on holiday in Portugal was for many years a well known figure in the medical circles of Harrogate Qualifying M.B C.M. at Edinburgh in 1882 he had already tasted of scientific exploration in the pathological laboratory during the progress of research there for the causative organism of tuberculosis Koch however was first After practising in Winchester for some years he moved to Harrogate in 1891 having obtained M.D Edin

(Hons) in the previous year A monograph on the waters of Harrogate appeared from his pen in 1893, and his publications thereafter showed that his interests were in dermatological and rheumatic conditions He became hon physician to the Royal Bath Hospital at an epoch when pathological laboratories were unheard of luxuries, and the physician had to struggle to obtain a tiny pantry, furnished with his own microscope In result, most of the section cutting was done at home He was also hon physician to the convalescent home of the Sunderland infirmary In the new century he began to be interested in colonic lavage, and was instrumental in getting the corporation baths fitted with appropriate appliances, thereby earning the gratitude of many sufferers He remained to the end a firm believer in the Harrogate treatment and was a striking exemplar of its benefits

Dr Liddell was a member of the Harrogate Golf Club from its inception, having been a pioneer of golf in England in the days when players were glad to have for a course a field or two with a few holes dotted about to suit the convenience of the farmer Curling, too, when winters were winters, was a pastime which he introduced to Harrogate clubs Retiring some seven years ago, he eventually settled in Wiltshire only last summer He leaves a widow and a younger son, who is lecturer in physiology at Oxford and a fellow of Trinity College His elder son, a lieutenant in the 60th Rifles, died of wounds in 1916

ARCHIBALD FAIRLIE, M D Glasg

The death occurred at the end of February of Dr Archibald Fairlie after a brief illness He received his medical education at the University of Glasgow, where he graduated as M B , C M in 1889, proceeding in the following year to the doctorate He held resident appointments at the Western Infirmary, Glasgow, and at the Maternity Hospital, Glasgow, and practised for a time at Bebside, his connexion spreading to Blyth He was a promoter of all benevolent and charitable work in the Blyth area, was a prominent member of the British Medical Association, and worked hard in connexion with the St John Ambulance Association The public value of his services was recognised by his being appointed a J P for the county of Northumberland Dr Fairlie was an excellent clinical physician taking all pains to keep up with modern work, while apart from his professional interest he was a well known authority on the history of his neighbourhood His death at the age of 72 is a loss to all classes He was a widower and leaves two sons, both of whom are in the medical profession

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 6TH, 1937

Notifications —The following cases of infectious disease were notified during the week Small-pox, 0 , scarlet fever, 1652 , diphtheria, 1087 , enteric fever, 41 , pneumonia (primary or influenzal), 1256 , puerperal fever, 38 , puerperal pyrexia, 122 , cerebro-spinal fever, 25 , acute poliomyelitis, 2 , acute polio-encephalitis, 1 , encephalitis lethargica, 1 , dysentery, 15 , ophthalmia neonatorum, 85 No case of cholera, plague, or typhus fever was notified during the week

Notifications of acute pneumonia were still much below expectation in London 56 per cent below in the country as a whole 26 per cent below

The number of cases in the Infectious Hospitals of the London County Council on March 12th was 3307 which included Scarlet fever 875 diphtheria 1048 , measles 25 whooping cough 592 puerperal fever 19 mothers (plus 11 babies) encephalitis lethargica 282 poliomyelitis 2 At St Margaret s Hospital there were 17 babies (plus 6 mothers) with ophthalmia neonatorum

Deaths —In 122 great towns, including London there was no death from small-pox or from enteric fever, 10 (0) from measles, 4 (2) from scarlet fever 21 (8) from whooping-cough, 35 (8) from diphtheria 58 (20) from diarrhœa and enteritis under two years and 181 (30) from influenza The figures in parentheses are those for London itself

Of the 145 deaths from influenza in the 122 great towns o England and Wales outside Greater London the largest total were reported from Birmingham 13 Liverpool 9, Manchester and Sunderland each 8 Newcastle upon Tyne 7 Gateshead 6 and Norwich 5

Hull reported 3 deaths from measles Stoke-on Trent Fatal cases of whooping cough were scattered over 14 great towns Liverpool reported 3 Fatal diphtheria was reported from 25 great towns 4 from Gateshead, 3 from Birmingham

The number of stillbirths notified during the week was 281 (corresponding to a rate of 41 per 1000 total births), including 42 in London

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

In the Abstract of Navy Estimates for 1937 the Medical Establishments and Services are estimated at £482,160 gross and £411,400 net For 1936 the estimates were £467,330 gross and £397,300 net

ROYAL NAVAL VOLUNTEER RESERVE

Proby Surg Lt R A Mogg to be Surg Lt

In the Abstract of Army Estimates, 1937, the Medical Services are estimated as follows gross, £1,107,000 , net, £1,055 000

ROYAL ARMY MEDICAL CORPS

Officers who wear spectacles when on duty, states a new Air Ministry Order, are responsible for providing themselves with a pair having the approved type of flattened side pieces which do not interfere with the wearing of a respirator Such frames can be readily obtained from optical firms

In the Abstract of Air Estimates, 1937, the Medical Services are estimated as follows gross, £466,000 ; net, £430,000 The figures for the year 1936 were gross, £405,000 , net, £382,000

INDIAN MEDICAL SERVICE

The following officers have assumed appointments in India Col J O Andrews, D S O , Deputy Director of Medical Services, Northern Command (confirmed from officiating appointment) , Lt Col G Wilson, O B.E M.C , D A.D M S (Mobilisation), Northern Command (confirmed from officiating) and Maj R Murphy, D A.D.M S , Waziristan District

Lt Col J G Gill, D S O , O B E , M C , Asst Director of Hygiene and Pathology at Army Headquarters, will be on leave in China and Japan from March 15th until the middle of May

The undermentioned officers have vacated appts in India —

D A.D M S —Lt Col P S Tomlinson, D S O , R A M C

D A D H —Maj J D'A Champney R A M C

D A.D P —Maj F J Hallinan, R A.M C

The undermentioned appts have been made in India —

D A D M S —Maj R Murphy, R.A.M C

D A.D H —Maj F Harris, M C , R A M C

D A D P —Lt Col A C Craighead, I.M S

Indian Medical Department —Asst Surg (1st Cl) F G Whitbread to be Lt (Sen Asst Surg) Maj (Sen Asst Surg) W G H Warner and Lt (Sen Asst Surg) S C Gomez retire

COLONIAL MEDICAL SERVICE

Dr W A. C Hortor has been appointed Medical Officer, Cayman Islands and Dr J I Rorrie Medical Officer, Jamaica Dr J Portelly and Dr W Young become Medical Officers, Superscale Grade A, Malayan Medical Service, Dr J H Bowyer and Dr J C Carson become Medical Officers, Superscale Grade B, Malayan Medical Service , Dr J A V Duncan becomes Assistant Director of Medical Service Nigeria , Dr L W Fitzmaurice Medical Officer and Bacteriologist, Bahamas , and Dr F W Vint, Senior Pathologist, Kenya

PARLIAMENTARY INTELLIGENCE

NEW ARMY REFORMS

In committee of supply on the Army Estimates on March 16th Mr Duff Cooper Secretary of State for War said that recruiting for the Territorial Army had increased steadily throughout the year In spite of the numbers who had necessarily left during the year the force to-day was stronger by 861 officers and 15,205 other ranks than it was a year ago Unfortunately, while recruiting had improved establishments had had to be increased as a result of the creation during the year of the 2nd Anti Aircraft Division and of the expansion of the 1st Aircraft Division The completion of these divisions and the provision of anti-aircraft defence for certain ports would add further to the establishments The total increase amounted to over 20 000 men as compared with last year and therefore though the strength had been increased by over 10 000 the Territorial Army was nevertheless further off from getting up to establishment than it was a year ago But they need not be discouraged by these figures So far as the Territorial Army was concerned they were undoubtedly in a rising market Great numbers of young men of the very best type were coming forward to join the anti-aircraft divisions

It had been decided to restore to the Territorial Army Associations the 2½ per cent cut on all grants which was introduced as an economy measure in 1928 This year a considerable increase in the training grant was to be made The cadet movement would no longer be dependent on private charity, and similar financial assistance would be given to it in future as it enjoyed in the past before recognition was withdrawn Recruiting for the Regular Army during the year had been worse than in the previous one It was of urgent importance that there should be a very substantial improvement for otherwise the Army would no longer be able to carry out its normal duties of furnishing garrisons required for maintaining peace and order throughout the British Empire

A number of reforms would be introduced in the ordinary curriculum of army life which Mr Duff Cooper hoped would increase the popularity of the Service The soldier s ration was to be increased to allow of four meals a day instead of three as hitherto At home stations an ounce of butter would be substituted for an ounce of margarine and the butter would be supplemented by half an ounce of margarine The daily ration of enlisted boys would be increased by an issue of milk or in other suitable ways. It had also been arranged that men living in married quarters or unable for other reasons to feed in mess should receive a sufficient allowance of food or money to ensure that they would enjoy the same scale of nourishment as that of their fellow soldiers Every effort was being made to improve the conditions of accommodation New barracks would include sleeping dining and ablution facilities Sitting rooms would be provided; hot and cold water laid on to every floor central heating throughout and arrangements were being made for increases in fuel scales So far as possible similar amenities were being extended to existing barracks, and married quarters were being brought up to the best housing standards of the day

NOTES ON CURRENT TOPICS

Factories Bill in Committee

The Factories Bill was further considered by a standing committee of the House of Commons on March 9th and 11th

Clause 6 (which provides for the drainage of floors in workshops) and Clause 7 (which requires the provision of sanitary conveniences) with minor amendment were agreed to

DUAL CONTROL

On Clause 8 (which provides that certain health provisions of the Bill shall be enforced by district councils as respects any factory in which mechanical power is not used) Mr H Graham White said there was anxiety in the minds of some members with regard to the principle of dual control of factories. Where a district council might not have a sufficient staff for inspecting works there would be a different standard It would be better if the whole responsibility was in the hands of the Home Office inspectors —Mr R. J Davies said that under the present proposals it was possible for a small factory with a small staff using mechanical power to be under the inspection of a Home Office inspector whereas a much larger factory where no mechanical power was used would be under the control of the district council —Mr Mander said there were parts of the country where there might be large works and a local council who might find themselves in a difficult position if called upon to take action against their personal or business friends In cases of that kind it was only the Home Secretary who could act with the necessary strength —Sir J Haslam suggested that the difficulty concerning dual control was covered by Clause 9 —Mr L. Silkin Mr W A Burke, and Mr A. Hollins urged that the clause should be reconsidered —After further discussion Sir J Simon said he hoped that when the Bill became law there would be a substantial increase in the number of factory inspectors and he wanted to use the additional staff to the best purpose There were some kinds of work which a Home Office factory inspector could do best and which nobody else could do In one sense there was dual control as suggested but the local authority and the factory inspector did not exercise their control at the same place and time and in that sense there was no dual control. He would further consider the matter and see whether there was anything which could properly be done The committee should have regard to Clause 9 with its provision for action by an inspector in default of a local authority

On Clause 9 Mr Short moved an amendment to give power to an inspector where he was satisfied that no proceedings had been taken by a district council for punishing or remedying an act or default, to take proceedings and recover from the district council summarily as a civil debt all expenses incurred in successful legal proceedings and not recovered from any other person The principle applied not only to factory and workshop inspection but also to housing accommodation and to tenants who had not been able to obtain their rights owing to the vicious opposition of property owners and some ratepayers —Mr R S. Hudson Parliamentary Secretary, Ministry of Health opposed the amendment —Mr R J Davies said there were some local authorities who would not move and others who moved so slowly that there could easily be an epidemic among employees in the meantime —The amendment was negatived by 28 votes to 15

Clause 10 (which empowers the Home Secretary in certain circumstances to authorise an inspector to act in default of a district council) was agreed to

MEDICAL SUPERVISION

On Clause 11 (medical supervision) which provides that where it appears to the Home Secretary that illness has occurred in a factory which is believed to be due to a process or other conditions of work or that because of changes in a process there may be risk of injury to the health of persons employed or that young persons are employed in work which may cause such risk of injury he can make special regulations requiring reasonable arrangements for the medical supervision (not including medical treatment) of persons or any class of persons employed there—Mr ELLIS SMITH moved the deletion of the words "not including medical treatment" The Bill, he said, did not conform to modern standards with regard to silicosis, lead poisoning, dermatitis, and several other industrial diseases It was not the fault of the employees that they contracted those diseases —Sir J SIMON said that the clause was doing something entirely new in factory law It was a clause which they could take some pride in, but it was not altogether reasonable to ask that an employer should bear the cost of the medical treatment of an employee There was national health insurance and elaborate arrangements in the matter of medical treatment were made by trade unions He was, however, prepared to modify the clause —The amendment was withdrawn and the clause agreed to with substitution for the words "not including medical treatment" of the words "not including medical treatment other than first-aid treatment and medical treatment of a preventive character"

Clauses 12, 13, and 14, tightening up the provisions for safeguarding machinery by fencing, were agreed to

QUESTION TIME

THURSDAY, MARCH 11TH

Alcohol and Road Accidents

Mr RICHARD RUSSELL asked the Home Secretary whether, in view of the probable heavy increase of motor traffic during the period of the Coronation festivities, he would, by circular or otherwise, draw the attention of the magistrates to the great increase of road accidents at festive seasons, when, as last Christmas, added drinking facilities were permitted, and recommend the closest scrutiny of the claims for lengthened hours of drinking during the Coronation celebrations, especially at times when larger crowds at a later hour of the day made caution on the roads specially necessary —Sir JOHN SIMON replied I feel sure that magistrates will not fail to take into account all relevant points when considering applications for such extensions during the Coronation festivities The limited extensions which have been granted on similar occasions in the past are not, I am informed, shown to be the cause of increased accidents

Children Born in Prison

Mr ANDERSON asked the Home Secretary how many children were born in His Majesty's prisons, and how many, if any, expectant mothers were released for their children to be born outside, for the 12 months ended December, 1936 —Sir JOHN SIMON replied During 1936 the numbers were 16 and 10 respectively

Hospital Staffs and Anti-Gas Instruction

Mrs TATE asked the Home Secretary what arrangements, if any, were being made by his department to send instructors and apparatus to hospitals, in order that hospital staffs might become proficient in the use of gas masks and the necessary steps to take in the event of war —Mr GEOFFREY LLOYD, Under Secretary, Home Office, replied Sixteen medical instructors have been appointed who are giving instruction in anti gas precautions to medical practitioners, nurses, and medical students Up to the end of last month 3059 doctors, 2459 nurses, and 569 medical students had been trained Arrangements are made through the British Medical Association, the College of Nursing and the medical schools respectively, and the instruction is often given at a hospital

Mrs TATE In the event of a doctor in charge of a mental hospital who has taken steps to make himself efficient in the use of masks applying for permission to instruct a certain number of his staff, would that permission be given to him ?

Mr LLOYD It would be given in any event

Mr BELLENGER Is it the intention of the Government to centralise instruction mainly in the Home Office School ?

Mr LLOYD In regard to medical training these doctors are stationed at the various key points throughout the country

Mr CREECH JONES asked the Home Secretary what steps, if any, H M Government intended taking to see that the gas masks for sale in this country conformed to the Home Office specifications —Mr GEOFFREY LLOYD, Under-Secretary, Home Office, replied A procedure has been arranged under which private manufacturers may be licensed to affix a Home Office certification mark to respirators of their own or Government design, which comply with a Government performance specification. Under this procedure manufacturers are required to submit specimens for examination and a test of performance If the article is satisfactory a licence is granted to affix the Home Office certification mark This licence remains in force for six months and thereafter until brought to an end by the Government The process of manufacture, the components of respirators and completed respirators are subject to Government inspection

Women and Young Persons and the Two-Shift System

Mr HOLLINS asked the Home Secretary whether he would consider the publication at his earliest convenience of a list of firms, and their location, working the two shift system under the Employment of Women and Young Persons Act, 1936, showing, respectively, the two-shift orders which had not been used during a period of two years and thereby expired, the orders which had not been operative during a period of one year which might be revoked, and other orders remaining in force , and whether he would consider the publication of such a list at least once a year —Sir JOHN SIMON replied The factory inspectors have been instructed to collect information as regards existing orders for the first six months of this year When their reports are received, I will consider the points raised by the hon Member

Perishable Foods

Mr HERBERT WILLIAMS asked the Minister of Health what steps he was advising the local authorities to take to avoid food poisoning in those districts where the suitable or sufficient temperature of shops had been fixed so high that there was a danger of the bacteriological infection of perishable foodstuffs —Sir KINGSLEY WOOD replied In deciding what temperature is suitable and sufficient it is for the local authorities to have regard, inter alia to the nature of the goods sold in the shop, and I have no reason to suppose that they are not alive to the importance of this consideration

Approved Societies and Additional Benefits

Mr JAMES GRIFFITHS asked the Minister of Health the average cash value of the additional benefits provided by approved societies under the National Insurance Acts , and what was the highest and the lowest additional benefit so provided by approved societies —Sir KINGSLEY WOOD replied I assume that the hon Member refers to statutory rates of sickness, disablement, and maternity benefits The average increase, covering some 70 per cent of the insured population, is about three units, that is 3s a week in respect of sickness benefit, 1s 6d in respect of disablement benefit, and 6s in respect of maternity benefit Some approved societies have made no increase, while some of the most prosperous have made an increase of five units and also devoted funds to various treatment benefits

Private Nursing-homes in Marylebone

Mr LIDDALL asked the Minister of Health whether he was aware that the London County Council had recently, in collaboration with the Marylebone Council, reviewed and weeded out the private nursing homes converted from single or adjoining decayed dwelling houses in the back streets of Marylebone and if he would call for an report on the results —Sir KINGSLEY WOOD replied I have no official information on this subject, but I will communicate with the London County Council and inform my hon friend of the result

The Trend of Population

Mr CARTLAND asked the Minister of Health whether he had set up the committee to investigate the trend of population if so, what were its terms of reference who were its members , and whether it was open to receive evidence from outside sources —Sir KINGSLEY

WOOD replied: The Registrar-General is continuing and extending his investigations and researches into this matter Consultation is also proceeding so as to secure the coöperation of the committee recently formed under the chairmanship of Prof Carr-Saunders and I think at the present stage this is the most useful course to adopt I will from time to time inform the House of the progress made in this important matter

Telephone Facilities and Urgent Illness

Lieut -Colonel WICKHAM asked the Postmaster General whether he was aware of the difficulties experienced by inhabitants of small villages unprovided with telephone kiosks in cases of fire sudden illness, and other emergencies; and whether he could see his way to reduce the existing rental of £4 for five years or alternatively to spread the total amount over a longer period.—Sir W WOMERSLEY Assistant Postmaster General, replied I am aware of the difficulties but they differ in degree with local circumstances, and it is necessary to maintain some fixed standard of discrimination Under the Jubilee concession kiosks will be provided without special payment in every village or hamlet where there is a Post Office and facilities do not already exist It would not be possible to provide kiosks in every village or hamlet throughout the country without overloading the finances of the department and delaying other work. Under the tercentenary concession therefore any village or hamlet can have a kiosk if the local authority with its special knowledge regards the local need for a kiosk as sufficient to justify it in paying for a period limited to five years a rental of £4 equal to the minimum rental paid annually by a subscriber I regret that I cannot see my way to reduce the sum or to spread it over a longer period at any rate during the present heavy pressure of demand upon the department s resources

The Cost of Living

Mr SHINWELL asked the Minister of Labour the percentage increase in the cost of living between February 1935 and February 1936 —Mr ERNEST BROWN replied: According to the statistics compiled by my department relating to the cost of maintaining unchanged the pre war standard of living of working-class families the average level of the cost of living of such families was approximately 42 per cent above the pre-war level at 1st February 1935 and 47 per cent above the pre war level at 1st February 1936 These figures indicate an increase of approximately 3½ per cent in the cost of living between the two dates

Cremation

Mr THORNE asked the Home Secretary how many crematoriums there were in this country; and how many people were cremated in 1937 —Sir JOHN SIMON replied The number in England and Wales is 20 I have no information as to the number of persons cremated this year but the total number of cremations in England and Wales last year was 10 188

MONDAY MARCH 15TH

Health Insurance: Juveniles and Medical Fees

Mr RHYS DAVIES asked the Minister of Health when he intended to introduce a Bill to bring into health insurance young persons on entry into employment; whether he had now come to an agreement with the medical profession as to panel fees in respect of such persons and if so what was the amount agreed upon —Mr HUDSON Parliamentary Secretary to the Ministry of Health, replied: My right hon. friend cannot say at present when this Bill will be introduced The question of the doctors fees for the young persons referred to has become bound up with the larger question whether the fees now paid for all insured persons call for revision by way of increase or decrease and my right hon friend has agreed with the suggestion of the medical profession that the whole matter should be referred to an independent Court of Inquiry

Medical Practitioners and Health Insurance

Mr LYONS asked the Minister of Health if he would state for the years 1935 and 1936 respectively the number of medical practitioners undertaking national health insurance work in this country; and the total amounts paid for such services out of national health insurance funds —Sir KINGSLEY WOOD replied: The numbers of medical practitioners under agreement with insurance committees in England and Wales in 1935 and 1936 were 16 552 and 16 700 respectively and the total amounts paid to them from national health insurance funds in respect of those years were £7 345 338 and £7 728,000 The last-named figure is approximate as the returns of expenditure are not yet complete

Children and Inflammable Cinema Films

Mr SIMMONDS asked the Home Secretary what action he proposed to take to prevent the sale of inflammable cinematograph film to children —Sir JOHN SIMON replied: This is a difficult matter which has been receiving much consideration and I should be glad to discuss the question with my hon friend

Milk Adulteration

Mr DAVID ADAMS asked the Minister of Health whether he was aware that cases in recent prosecutions by the Newcastle Corporation, under the Food and Drugs (Adulteration) Act 1928, Section 16 (2) of vendors selling new milk deficient in non fatty solids 17 2 per cent and 15 4 per cent respectively were dismissed by the magistrates; and whether as deficiencies on this scale indicated the presence of added water he would consider legislation for the more adequate protection of the public in this matter —Mr HUDSON replied My right hon. friend was not previously aware of these cases, but he has now received a communication from the town clerk with regard to them My right hon. friend is making further inquiries and will communicate with the hon Member when these are completed

Diphtheria in Huddersfield

Mr GROVES asked the Minister of Health how many cases of diphtheria had been recorded in Huddersfield in children who had been immunised against that disease; and whether there had been any deaths in immunised children during the period in which immunisation had been practised.—Sir KINGSLEY WOOD replied I have been in communication with the local authority and the following is the information which they have furnished on this subject: Approximately 50 per cent of the children of Huddersfield have been immunised to protect them against diphtheria During the past four years amongst the 50 per cent not treated by immunisation there were 1138 cases of diphtheria resulting in 133 deaths During the same period amongst the 50 per cent treated by immunisation there were 40 cases of diphtheria resulting in one death. The one death referred to above is the only instance in which a death has occurred in a child who had been immunised

Cheap Milk for Mothers and Young Children

Mr DAVID ADAMS asked the Minister of Health whether it was intended to make the scheme for the provision of cheap milk for expectant and nursing mothers and children under school age general throughout the country; and whether its application for the six summer months only would be extended to the whole year in future —Mr HUDSON replied: It is the intention of the Milk Marketing Board and the Commissioner for the Special Areas that the schemes which have been in operation in Rhondda since July 17th 1936 and in Jarrow since Jan 1st 1937 should run until Sept 30th 1937 but before that date the Board and the Commissioner will consider the results with a view to a decision on the future of the schemes

TUESDAY MARCH 16TH

Public Kitchens in Necessitous Areas

Mr WILSON asked the Minister of Health whether in view of the popularity which had attended the establishment of milk bars he would consider the possibility of setting up in some of the more necessitous areas public kitchens where at a small cost the more nutritious kinds of food could be supplied either for consumption on the premises or otherwise —Mr HUDSON, Parliamentary Secretary to the Ministry of Health, replied I am afraid that the action proposed would not be within the powers of my department

Expenditure on Mental Deficiency

Mr WILSON asked the Minister of Health whether he was aware that the expenditure in respect of mental deficiency which had fallen upon the rates of county and county borough councils had risen from £694,390 in 1929–30 to £2,031,949 in 1932–33, and whether he could explain the causes for such an increase —Mr HUDSON replied The figures quoted by the hon Member do not represent the real position The expenditure by local authorities amounted in 1929–30 to £1,500,244 and in 1932–33 to £2,191,847 An Exchequer contribution to the cost was paid in both years, in the former as a direct grant of 50 per cent of expenditure, in the latter as part of the Block Grant The increase in total cost shown by the figures I have quoted is due to the fact that it is a growing service and more attention is now being paid by local authorities to the matter

MEDICAL NEWS

University of Oxford

Dr H M Sinclair, lecturer in physiology and biochemistry in University College, formerly senior demy of Magdalen and Radcliffe scholar in pharmacology, has been elected to a travelling fellowship on the foundation of Dr John Radcliffe

Applications are invited by the Nuffield Committee for the whole time post of assistant director of pathology to work at the Radcliffe Infirmary The stipend offered is £1000 a year, and the committee will propose to the University that the title of Nuffield reader in pathology be conferred upon the assistant director Further information about the post may be had from the secretary of faculties, University Registry, Oxford, to whom applications should also be sent before April 26th

Mr Humphrey Neame has been appointed examiner for the diploma in ophthalmology in place of Mr P G Doyne

Dr Paul Fildes has been appointed examiner in pathology for the degree of bachelor of medicine in place of the late Prof E H Kettle

University of Cambridge

On March 12th the following degrees were conferred —

M D—D W Smithers

M Chir—W H G Jessop

M B B Chir—*F G Hinks *F B Thomas, *B L Williams *Alfred Rothwell *D G Freshwater *W J Montague C S Humphries A D Ledward N D Jekyll V C Robinson E G K Williams, G I Watson I C Fletcher B C M Palmer E O Walker G L Broderick H D Johnson, G S W Organe, A M McFarlan R G M Keeling and F D M Livingstone

M B—*S J R Reynolds *W G Brander, *L T Hilliard *J H Stothert *T S R Fisher *W M Beattie J C Newbold John Diver, J R Chambers H S Wigfield, C G Batty Smith Charles McNeil T C Larkworthy C J Martin and F G A Beckett

* By proxy

The title of the M B degree has been conferred on M Ball and of M D on A M Stewart

University of Manchester

Dr Stanley Hodgson has been appointed lecturer in forensic medicine and Dr E N Rowlands chief medical assistant in the department of clinical investigations and research

London County Council

On Tuesday Mr Somerville Hastings was reappointed chairman of the Hospitals and Medical Services Committee with Miss E Rickards as his deputy Dr C W Brook resumes the chair of the committee on Welfare of the Blind

Fellowship of Medicine and Post Graduate Medical Association

The following courses will be given during April ophthalmology at the Royal Eye Hospital (April 5th to 17th), plastic surgery (April 14th and 15th), neurology at the West End Hospital for Nervous Diseases (April 19th to 24th), Week-end courses will be held in diseases of the heart and lungs at Victoria Park Hospital (April 10th and 11th) in fevers at Park Hospital (April 17th and 18th) in infants diseases at the Infants Hospital (April 24th and 25th), and in cancer at the Royal Cancer Hospital (April 24th and 25th) On Saturday, April 3rd there will be a special demonstration on pulmonary tuberculosis (at Preston Hall) and on Tuesday, April 6th, there will be a demonstration on the fundus oculi at 8 30 P M Both are intended for M R C P candidates Detailed syllabuses of all courses can be obtained from the secretary of the Fellowship, 1, Wimpole street, W 1

Royal College of Surgeons of England

A meeting of the council of the college was held on March 11th with Sir Cuthbert Wallace, the president in the chair Mr R B Wade of Australia was admitted an honorary fellow of the college Mr D H Patey was elected an examiner in pathology under the Conjoint Examining Board

The following hospitals were recognised for the six months' surgical practice required of candidates for the final examination for the fellowship

Victoria Hospital Burnley (house surgeon to Unit I and II), Withington Hospital, Manchester (resident surgical officer senior assistant medical officer Grade 2 junior assistant medical officer Grade 3) Prince of Wales's Hospital Plymouth (resident surgical officer and three house surgeons) and at Devonport (*senior house surgeon for one year only*) King Edward VII Hospital Windsor (three house surgeons)

A diploma of fellowship was granted to M H B Robinson and a diploma of membership to D V Hague Licences in dental surgery were granted to the following candidates —

G M A Brown A J Clegg H A Dixey F B Gamblen Eileen F Gawn J L Harrington B J Harrison C W Lawrence Frank McCombie N A McCormick K J Millett, F A Moore W R G Morris Bankim Mukerjee B W P Roberts N L Rowe V S Sams Jacques Schermant E C Sharp H B Shay Melissa Sprowson, Kurt Strauss J E Tudor, W K Weighell W D Westoby David Wolfe and J D Wren

Diplomas in ophthalmic medicine and surgery were granted jointly with the Royal College of Physicians to the following candidates —

Aziz Ahmed Edward Bacon A K Banerjee F P C Claffy, F J Darbyshire B K Das Gupta G S Dhillon, M L A Dubash M A K Durrani R L C Fisher, S A Foad V V Gupte Helen M Herbert R F Jamieson Eileen M Kennedy H M Kera Ram Labhaya C R D Leeds B N Pershad J D Maude Kathleen A Pih S M Ruwala Brendan Sheehan E C Srinivasan Jean W Strand K J Talbot and B D Telang

Jewish Hospital Medical Society

The Anglo Palestinian Club will be at home to this society on Sunday, March 21st at 8 30 P M, at 43 Great Windmill street, Piccadilly, for an evening of *medicine magic, music and murder* Mr Arnold Sorsby will be in the chair

The Zunz Fund

The trustees of this fund, which was established in 1899 have offered to distribute its capital to 34 London hospitals in more or less the same proportions as the annual grants being hitherto made The only condition is that the wards named after Annie Zunz which were supported by the annual grants shall be maintained in perpetuity If the offer is accepted about £425 000 will be distributed

Microchemical Club

At the annual general meeting of this club on March 13th the following officers were elected hon treasurer, Mr L H N Cooper Ph D, hon secretary, Mr J R O'Brien hon librarian Miss Isobel Hadfield, members of committee Prof H V A Briscoe Mr J Matthew, and Mr S J Folley Ph D

London Hospital

The ordinary income of this hospital has slightly decreased but it is expected that there will be a surplus of income over expenditure of about £4000 for the institution has received legacies amounting to over £18,000 It is however difficult to find funds for necessary capital improvements

New Mental Hospital

On June 14th the Minister of Health will open a new mental hospital at Runwell Essex, which is the joint scheme of East Ham and Southend-on-Sea Its cost has exceeded £650 000 and it will house 1000 patients and is provided with all modern equipment including a theatre.

London Homoeopathic Hospital

At the annual general meeting a letter was read from the Keeper of the Privy Purse stating that the King had been pleased to grant his patronage to the hospital Lord Donoughmore said that the past year had been a satisfactory one since much work had been accomplished and the finances had not suffered

A New Hospital for South London

A site has been acquired opposite the park in Lambeth road for a new hospital to be erected by the Institute of Trained Nurses of Our Lady of Consolation. The present small hospital is in Barkham terrace for which site £10 000 has been paid The new building is to cost £100 000

Royal London Ophthalmic (Moorfields) Hospital

The annual dinner of this hospital took place on March 11th at the Langham Hotel Mr T Harrison Butler presiding In his response to the toast of The Medical School, Mr C B Goulden, the dean incorporated a report of the year s progress He said that the school was flourishing and that students had joined the hospital in larger numbers than previously there being 1?4 new students during 1936 The examination results had been satisfactory The Gifford Edmond prize had been awarded to Mr J Bruce Hamilton of Hobart Tasmania a old student and senior resident officer for his essay on the significance of heredity in ophthalmology Apart from continuous clinical instruction 693 hours of lectures had been given. Mr Fincham had delivered a series of lectures on modern ophthalmic instruments and Prof Dodson on allergy Six series of demonstrations had been given to students of the Postgraduate College at Hammersmith. There had been several changes in the staff during the year Sir Stewart Duke Elder had resigned from the hospital, and Sir John Parsons who had lectured on physiology since 1919 had also resigned his lectureship To replace these the school had secured the services of Dr R J Lythgoe reader in physiology of the special senses in the University of London Dr Russell Brain had retired and in his place Dr Denis Brinton had been elected to the staff. Mr Frank Law had joined the staff and undertook the classes in practical surgery Mr C D Shapland had been appointed curator and pathologist and Mr R C Davenport was the new sub-dean The school still felt the need of a proper professorial unit in which full time officers could give more attention to the teaching Under the present arrangement it was impossible to do more and recently the help of chief clinical assistants had been obtained to give tutorial classes and these had been much appreciated

Appointments

ANN L., M D Lond., D P M has been appointed Deputy Medical Superintendent of Park Prewett Mental Hospital Basingstoke

DUX R. W M R C S Eng., Resident Surgical Officer at the Manchester Hospital for Consumption and Diseases of the Throat and Nose

ROY, IAN M B., M R C P Lond Hon Assistant Physician to the Aberdeen Royal Infirmary

SUMMALL, G 1 M M B Edin D P H Lond., Assistant School Medical Officer for Huddersfield

MMMONS D N., M B Camb F R C S Eng Surgical Registrar at the Westminster Hospital

EVANS, R D M B Camb Hon Anaesthetist to the Connaught Hospital London

TOD MARGARET M B F R C S Edin D M R E Assistant Director to the Holt Radium Institute Manchester

St Bartholomew s Hospital —The following appointments are announced —

CHANDLER, F G M D Camb F R C P Lond Physician

DENNY BROWN D E M B N Z D Phil Oxon., F R C P Lond Neurologist

EVERIDGE H J., M D Camb F R C S Eng Assistant Orthopaedic Surgeon

KENNEDY, H H L D S., Assistant Dental Surgeon and

WALKIN, D GRIFFITH L D S Chief Assistant to the Dental Department

CONVERSAZIONE AT THE UNIVERSITY OF LONDON

LAST Tuesday evening the chairman of convocation was at home to the graduates of the University and their friends Over a thousand persons took the opportunity to see Mr Holden s beautiful senate house block of which the reception hall, panelled with travertine is a remarkable example of warm academic hospitality The other university buildings including the library and great tower are still in their early stages but already London University has begun to feel like a home to its graduates—and even to its undergraduates The guests were entertained on Tuesday with music dance and drama of a high grade but the real attraction was the opportunity of which free use was made for graduates of all faculties to meet each other and the administrative staff of the University Refreshment was comfortably served in various parts of the house and especially at the long tables in the long low refectory on the third floor

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday and cannot appear if it reaches us later than the first post on Wednesday morning

SOCIETIES

ROYAL SOCIETY OF MEDICINE 1 Wimpole-street W

TUESDAY March 23rd

Medicine 5 P.M Dr Stuart Blackmore The Effects on the Respiratory System of Asphyxiating Gases

Urology 8.30 P.M Clinico-pathological meeting Specimens illustrating stones in the kidney and ureter will be shown.

WEDNESDAY

Comparative Medicine 5 P.M Prof. S J Cowell, Miss Harriette Chick, D Sc Dr Leslie Harris, Dr J T Edwards and Dr H H Green Nutrition and its Effect on Infectious Disease

MEDICAL SOCIETY OF LONDON 11 Chandos-street W

MONDAY March 22nd —8.30 P.M Dr Donald Hunter Consideration of Some Occupational Diseases

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane road W

TUESDAY March 23rd —4.30 P.M., Dr [illegible] Endocrine Diseases and Disturbances

WEDNESDAY —Noon clinical and pathological conference (medical) 2.30 P.M., Dr A Miles [illegible] Urine 3.15 P.M clinical and pathological conference (surgical)

THURSDAY —Noon clinical and pathological conference (obstetrics and gynaecology). [illegible] White Radiological Demonstration [illegible] A K Henry Demonstrations on [illegible] Surgical Exposures 3.30 P.M., [illegible] Genital Prolapse

Daily 10 A.M to 4 P.M medical clinics, [illegible] and operations obstetrical [illegible] and operations

WEST LONDON HOSPITAL POST-GRADUATE [illegible] Hammersmith, W

MONDAY, March 22nd —10 A.M., [illegible] of X Ray Films [illegible] P.M., operation [illegible] medical, surgical, and [illegible]

TUESDAY —10 A.M., [illegible] ward [illegible] P.M [illegible] throat clinics

WEDNESDAY —10 A.M [illegible] medical wards [illegible] P.M [illegible] medical, surgical, and [illegible]

THURSDAY —10 A.M [illegible] clinics [illegible] medical, surgical [illegible]

NATIONAL HOSPITAL [illegible] Westminster [illegible]

TUESDAY [illegible]

HAMPSTEAD [illegible] HOSPITAL,

WEDNESDAY [illegible]

MANCHESTER [illegible]

TUESDAY [illegible]

GLASGOW [illegible]

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Infirmary —Hon Clin Tutor

Accrington, Victoria Hosp —H S £150

Aylesbury Royal Buckinghamshire Hosp —Second Res M O , at rate of £150

Bangor Caernarvonshire and Anglesey Infirmary —Sen and Jun H S , £150 and £100 respectively

Barbados General Hosp —Two Jun H S s each £325

Basingstoke Park Prewett Mental Hosp —Second Asst M O £600 Also Jun Asst M O £350

Bath Royal United Hosp —H S to Ear, Nose and Throat Dept , at rate of £150

Belgrave Hosp for Children 1 Clapham road, S W —Two H P 's and two H S s, each at rate of £100

Birmingham, Monyhull Colony —Res Asst M O , £350

Birmingham St Chad's Hosp —H P and Anæsthetist, at rate of £150

Bolton Royal Infirmary —H S , £150

Bradford Royal Eye and Ear Hosp —H S £180

Bradford Royal Infirmary —Two H P s three H S s and Cas H S , each at rate of £150

Burnley, Victoria Hosp —H P and H S each at rate of £150

Buxton Devonshire Royal Hosp —Research Worker in Rheumatic Diseases, £400

Canterbury Kent and Canterbury Hosp —H S at rate of £125

Carlisle Cumberland Infirmary —H S at rate of £155

Cobham Surrey Schiff Home of Recovery —Surgical Officer at rate of £200

Connaught Hosp Walthamstow E —Cas O , at rate of £100

Derbyshire Education Committee —Asst School M O £500

Doncaster Royal Infirmary and Dispensary —Res Anæsthetist, at rate of £175

Dover Royal Victoria Hosp —Res M O £180

East Riding County Council of York —Asst County M O H , £500

Edinburgh Royal Infirmary —Jun Asst Radiologist £250

Epsom County Hosp —Res Asst M O at rate of £375

Evelina Hosp for Sick Children Southwark S E —Ophth Surgeon 50 guineas

Farringdon General Dispensary 17, Bartlett s Buildings E C —Hon Physician

Glasgow Royal Mental Hosp Gartnavel —Jun Asst Physician £300

Gloucestershire Royal Infirmary —H S at rate of £150

Grimsby County Borough —Asst M O H £500

Halifax General Hosp —Med Supt £800

Harrogate Royal Bath Hosp —Res M O £156

Hosp for Consumption and Diseases of the Chest, Brompton, S W —Res Surg O and Asst Res M O each at rate of £150 Also three H P s and H P for Frimley Sanatorium each at rate of £50

Hosp of St John and St Elizabeth 60 Grove End road N W —Res H S , at rate of £75

Hove General Hosp —Jun Res M O £120

Hull City Hosp —Jun Res M O £350

Hull Municipal Maternity Home and Infants' Hosp —Jun Res M.O , at rate of £100

Indian Medical Service —Commissions

Isleworth West Middlesex County Hosp —Three Res Asst M O s each £400

Jewish Maternity Hosp Underwood street E —Res M O at rate of £50

King s College Hosp , Denmark Hill S E —Sen and Jun Asst Radiologists

Lancaster County Mental Hosp —Asst M O , £500

Leicester County Sanatorium and Isolation Hosp Markfield —Jun Res M O at rate of £300

Leicester Royal Infirmary —Res Radiologist at rate of £200

Liphook Hants King George s Sanatorium for Sailors —Asst M O at rate of £200

Liverpool, Bootle General Hosp —H.S to Spec Depts at rate of £150

Liverpool City Infectious Diseases Hosp —Asst Res M O £250

London County Council —Two Res Med Supts £1300 and £1100 Part time M O 's each £300 Asst M O Grade II £250 Temp Dist M O for Area VII £160 Also H P and H S each at rate of £120

London Hosp , E —First Asst to Neuro surgical Dept

London Lock Hosp 283 Harrow road W —Res M O to Female Depts , at rate of £175

Macclesfield, Cheshire County Mental Hosp , Parkside —Asst M O £350

Maidstone Kent County Ophthalmic and Aural Hosp —Ophth H S at rate of £200

Manchester Ancoats Hosp —Res M O at rate of £150

Manchester Christie Hosp and Holt Radium Institute Withington —Res M O at rate of £150

Manchester City —Asst Tuber O £650

Manchester Ear Hosp —R S O Hosp registered for D.L O Salary £120 per annum

Manchester Monsall Hosp for Infectious Diseases —Res Asst M O at rate of £250

Manchester Withington Hosp —Res Asst M O at rate of £300

Mansfield Harlow Wood Orthopædic Hosp —H.S at rate of £200

Middlesbrough, North Riding Infirmary —Cas O at rate of £150

Newark General Hosp —Res H.S £175

Newcastle General Hosp —Cons Surgeon for Throat Nose, and Ear Cases £175

Newcastle upon Tyne City Hosp for Infectious Diseases —Res Med Asst £350

Northamptonshire County Council —County M O H and Chief School M O £1100

Northwood Mount Vernon Hosp —H S at rate of £150

Nottingham and Midland Eye Infirmary —Res H S , £200

Nottingham City —Asst. M O for V D Clinic, £500

Oldham Royal Infirmary —H.S at rate of £175

Preston and County of Lancaster Royal Infirmary —Cas H.S. £150

Princess Beatrice Hosp , Earl's Court S W —Hon Clin. Asst to Out patients' Dept Also Med Reg

Princess Louise Kensington Hosp for Children, St Quintin avenue W —H.S , at rate of £120–£150

Richmond Surrey Royal Hosp —Jun H.S at rate of £100

Royal Cancer Hosp , Fulham road S W —Second Asst Pathologist £250

Royal Free Hosp Gray's Inn road W C —Res Cas O at rate of £150

Royal Naval Medical Service —M O 's

St Bartholomew's Hosp , E C —Asst Physician

St John s Hosp , Lewisham S E —Hon Dermatologist

St Leonards-on Sea Buchanan Hosp —Jun H.S £125

St Paul s Hosp Endell street W C —Hon Surgeons

Salford City —Asst Maternity and Child Welfare M O £1 11s 6d per session

Salisbury General Infirmary —H S at rate of £125

Samaritan Free Hosp for Women, Marylebone road N W —H S at rate of £100

Sheffield Children s Hosp —H P , at rate of £100

Sheffield Royal Hosp —Clin Asst to Ophth Dept £300

Southend-on Sea General Hosp —H P and H S , each at rate of £100

South London Hosp for Women, Clapham Common S W —Surg Reg at rate of £75

Stoke-on Trent, Burslem Haywood and Tunstall War Memorial Hosp —Res H P at rate of £150

Sunderland Royal Infirmary &c —Surgeon to New Orthopædic Dept and Fracture Clinic

Swanley Kent Hosp Convalescent Homes Parkwood —Res M O at rate of £200

Swansea General and Eye Hosp —H.P , at rate of £150

Truro, Royal Cornwall Infirmary —H.S., £170

Wilts County Council —Asst M O , £700

Wimbledon Hosp Thursdan road, S W —Res M O at rate of £150

Winchester Royal Hampshire County Hosp —Hon Anæsthetist

Windsor King Edward VII Hosp —H.S £100

Wolverhampton Royal Hosp —H S and H S to Orthopædic and Fracture Dept each at rate of £100

Wrexham and East Denbighshire War Memorial Hosp —Two Res H S s, each at rate of £150

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Currie (Midlothian)

Births, Marriages, and Deaths

BIRTHS

BOULDEN —On March 9th at Canterbury the wife of Dr Peter Boulden of a daughter

BROWNING —On March 10th to Dr and Mrs S Barratt Browning at Wellington House Handsworth Wood Birmingham—a daughter

DENNING —On March 10th at Hong Kong the wife of Captain G M Denning R A M C of a daughter

GRAHAM —On March 14th at St. John s Wood N W the wife of Dr Walter Graham, of a son

LOWE —On March 14th at Lacock Wilts, the wife of Dr J B Lowe of a son

MCLEOD —On March 9th at North Walsham Norfolk, the wife of Dr T H McLeod of a daughter

SMELLIE —On March 7th at Sherwood Woking the wife of Mr W B Smellie F R C S , of a daughter

MARRIAGES

BALL—PEARSON —On March 9th, at St Marylebone Parish Church Peter H Ball R.A M C , only son of Dr C Ball, of Hunstanton Norfolk to Mary le Goyt younger daughter of J R Pearson C I E late I C S of Jersey

DEATHS

ALEXANDER.—On March 14th at Bankside, Teddington Frederick William Alexander O B E M R C.S Eng D P H , aged 78

BLAIR.—On March 14th at Hillfield Underhill road Clendon Ernest Blair L R C P Edin

BUSWELL —On March 13th, at Prince of Wales terrace Kensington W , Colonel Herberd Richard Buswell C M G , R.A M C (retd) aged 72

GALT —On March 14th at Taswell road Southsea Hants Lieut. Col Robert Gale D.S O M B Glasg R A M C (retd)

SCOTT —On March 12th at Fair Lea West Cliff road Bournemouth Bernard Scott M R C.S Eng , aged 78

WENYON —At Skailbrae Dundee on Feb 20th 1937 Edwin James Wenyon M B M R C S , aged 84 years

N.B —A fee of 7s 6d is charged for the insertion of Notices of Births Marriages and Deaths

NOTES, COMMENTS, AND ABSTRACTS

SCIENTIFIC RESEARCH IN INDUSTRY

ONE of the most important developments in industrial research in the last five years has been the formation of well balanced teams of workers—including chemists physicists engineers and, where necessary, biologists—whose steady march has replaced the sporadic bursts of brilliant individualists The Coöperative Research Associations are the main outcome of this movement and an encouraging summary of their work has been published in the report for 1935–36 of the Department for Scientific and Industrial Research.[1]

Many of the activities of the department are more or less directly connected with public health There have been for example many advances in the campaign against noise Besides the investigation on the problems of sound proof buildings tests have been carried out at the National Physical Laboratory on the reduction of noise from aircraft engines large electrical transformers road drills and traffic. An investigation has also been begun on the production of static electricity in operating theatres of hospitals In dry countries the ignition of explosive anæsthetics by sparking is recognised as a serious risk and it was considered *important enough in this country* to be investigated; experiments are being made on hospital equipment with the help of the medical authorities At the request of the Home Office a preliminary examination has also been undertaken of the risk of ignition in dry-cleaning works where some of the liquids produce an ignitable vapour when mixed with air Methods for detecting in the atmosphere small quantities of poisonous gases commonly occurring in certain industrial processes have also been worked out.

Researches for the Dental Board on dental amalgams have been completed during the year The results have shown that the composition of the alloy used in making the amalgam must lie within very narrow limits if the dentist is to produce fillings that will continue to fill cavities without contraction The precautions to be observed by the dentist in preparing the amalgam have also been established The conditions for both the manufacture and use of materials for amalgam fillings have been determined as the result of an extended series of experiments in which the changes of volume at mouth temperatures have been measured sometimes over long periods. The report claims that the results of this work if generally applied should place this country ahead of the rest of the world in this particular aspect of dentistry

Interesting physical work has been carried out in connexion with radium beam therapy The strength of the radiations from a specially designed radium unit with which varying radium-skin distances can be obtained, have been measured in a phantom a celluloid vessel containing water and giving the same scattering and absorption effects as the human body Means have been developed for accurately measuring and controlling tissue-dosage during treatment Another investigation is in progress on the weak radiations that may reach distant parts of a patient's body during treatment These it is believed may be important in contributing to the constitutional effects of radium therapy

The Food Investigation Board has made several interesting observations At the Low Temperature Station Cambridge the effect of radiation from radioactive substances in destroying bacteria are being studied in connexion with the storage of meat Owing to their great penetrating power it is possible to study the effects of γ rays on bacteria grown in nutrient media and experiments on *Bacillus coli* have shown that the lethal action of the radiation proceeds independently of growth in the medium. Under certain conditions abnormally long forms of *B coli* are produced analysis of viable and total counts and of measurements indicate that the production of these is due to division being inhibited, while growth itself is unaffected. The flesh of eels has been found to be an unusually rich source of vitamin A which however is distributed unevenly throughout the body being largely concentrated in the tail. Methods of storing eggs in different concentrations of carbon dioxide are being tried out on a large scale, a high concentration of about 60 per cent was found to prevent attack by mould The manner in which the quality of pork and bacon is related to the diet of the pig is being studied. In the diet an ounce of cod liver oil a day may be good for the living pigs but it causes the fat to become rancid in curing even when administration was stopped some considerable time before killing Heavy exercise before slaughter makes the pig's tissues more alkaline, a fact that has been found to be important in dry salt curing for alkalinity inhibits the diffusion of salt and sugar and predisposes to infection by the anaerobes that produce bone-taint By methods shown to be successful on a large scale and already adopted by several factories pollution by milk washings can be decreased by about 98 per cent It has been found that the *losses of milk, cream,* whey &c *can be reduced by* nearly three million gallons a year This recovered milk is used for manufacturing purposes thus saving about £50 000 a year to the industry

The Boot and Shoe Research Association is making very careful records of the way in which various people walk by means of cinematograph records and by measuring with electrical thermometers the skin temperature of the feet when wearing different types of shoes Various gaits and the effect of different kinds of shoe upon them are also being investigated The results suggest that some shoes usually considered suitable are much more likely to interfere with the normal gait than others and this is throwing light upon the essentials of correct shoe design and construction

In spite of the many advances, the report however still regards the position of the research association movement as a whole as not yet entirely satisfactory The department is prepared to provide a further £60 000 each year to the support of these associations and would have found that sum in each of the past two years had industry been ready to make an equivalent contribution In fact the income of the associations might have been increased by a further £150 000 a year of which only half had to be found by industry if full advantage had been taken of the department's offers.

A QUESTION OF EMPHASIS

Dr G G SHERRIFF (Edinburgh) writes: The interesting article last week on medicine in Russia raises wider issues worthy of discussion The key section was the following: The primary concern of the medical service in the U.S.S.R is not with hospitals or with diseases and their cures but with the maintenance and improvement of the health of the community The care of the sick and their disposal to hospital becomes a subsidiary function In the public mind the emphasis has thus been shifted away from the idea of disease toward that of health which in itself helps to promote a healthy society —Although the more enlightened members of the profession in this country continually preach the need for the above change of emphasis, the *status quo* is little altered All the power and glory still belong to the experts in disease The higher degrees and diplomas so necessary for high preferment are based overwhelmingly on disease and the minute, even pedantic study of its protean forms Analysis flourishes, but synthesis languishes an exile from most curricula and syllabi those cast iron portals on the path of progress Until this radical defect is remedied the nineteenth century outlook will retain its predominant influence

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H M Stationery Office 1937 Pp 195 3s

THE GREATEST EGYPTIAN MEDICAL DOCUMENT

HIPPOCRATES, whom we Europeans call the Father of Medicine, lived in the fifth century before Christ, and was according to Greek tradition born some nineteen generations after the deification of Æsculapius, that is about six hundred years after the profession had its origin The earliest Greek tradition, however, with which we are acquainted, that of Homer, did not recognise Æsculapius as a god, but simply claimed him as a "blameless healer" inspired by the God of Healing, Pæon But the Greeks themselves were a young people compared with the nations of the East, and in fact obtained a great, indeed probably a major, portion of their culture from the ancient Empires of the East And so Dr Ebbell dedicates his translation of a great Egyptian medical work[1] to the physician Imhotep, the acknowledged father of Egyptian medicine

The Papyrus Ebers can be dated with considerable accuracy to about the year 1550 B C, that is some 350 years before the siege of Troy, and at least 1000 years before the date of Hippocrates But even that was not the beginning There is extant another Egyptian papyrus which can be dated between three and four hundred years earlier, and the Papyrus Ebers itself contains references to written documents which were a thousand years old when it was compiled So the trail runs backward nor is it probable that the art of healing, which must have been one of the earliest professions to arise so soon as men had learnt to live with their fellows in communities, would not have been committed to writing directly written communication was invented As the corpus of knowledge and the numbers of aspirants increased some permanent record of medicinal lore became inevitable What was the ultimate source from which the Egyptians drew their knowledge of medicine is not and probably never will be known, but this much at least is certain, that the Papyrus Ebers represents the accumulated medical wisdom of many centuries

What then does orthodox medicine of 1550 years before Christ look like to us nowadays? Dr Ebbell has done his best for us with this translation and his learned and ingenious interpretations of what is only too often obscure In the course of years of study he has succeeded in finding probable interpretations for many of the words which were unknown to the Egyptologists of fifty years ago when the Papyrus first came to light Ebers bought it in Egypt in 1873 and printed it in full in 1875 But there still remains a large amount of words, expressions, references, and even whole sentences, the meaning of which is obscure Yet enough has been securely transferred to our modern tongue to enable us to assert the existence of a body of medical and surgical knowledge founded on careful observation One section reads thus "The beginning of the physician's secret knowledge of the heart's movement and knowledge of the heart There are vessels from it to every limb" "the heart speaks out of the vessels of every limb" The surgeon is told "If thou examinest an oozing swelling of the male genitals and if thy finger examines and the swelling is like [an unknown word] under thy fingers and it slips away then thou shalt say concerning it it is a swelling of the male genitals it is a disease which I will treat by an operation Thou shalt bandage him with grease and treat as one treats wounds in any limb of a man" Thus *Dr* Ebbell interprets as instructions for the operative treatment of a hydrocele

The greater portion of the treatise is however occupied with the appropriate remedies for the relief of symptoms such as cough, pain in the belly, worm-disease—Dr Ebbell believes that they knew of the worm which we call bilharzia, and also of the *Anchylostomum duodenale*—spitting of pus asthma, that is shortness of breath, dropsy, and so on And it is here that once more we find that there is no new thing under the heavens Among much which is obsolete and much that cannot now be understood, there are many of the drugs and minerals which the doctor of to-day still uses freely senna and castor oil, calamine and antimony, colocynth and hyoscyamus We read "Remedy to cause purgation senna pods and fruit of colocynth are ground fine, put on honey and eaten by the man and swallowed with sweet wine" A remedy for blisters on the limbs consists of pine tar, turpentine, an unknown substance, cuttle-bone, yellow ochre ground fine with water and applied as an ointment—and probably quite as efficacious as any modern prescription for a bullous eruption

Dr Ebbell and his publishers in Copenhagen and here have earned a debt of gratitude in thus enabling the modern profession to realise something of what we owe to the long line of our precursors which stretches out to the earliest dawn of history and the dim recesses of prehistoric ages

HOME CARE OF THE MENTAL PATIENT

FROM Holland, where much attention is paid to the home conditions and occupations of the patient with unbalanced mind, comes (in English)[1] a simple description of mental disorder designed for the lay rather than for the medical man The words "psychosis" and "neurosis" are never mentioned, but brief accounts of the common types of mental and neurotic abnormalities are given—too brief perhaps to be of much use to those who are struggling with the serious problem of an acutely ill or a chronically demented patient at home Dr Querido's clinical descriptions, though brief, are provocative He includes all the psychoneuroses under the general title "disharmonic personalities" and then divides them into "tyrants" and "shirkers" These terms are not, perhaps, inappropriate but we doubt whether it is wise to use them in a book for laymen, since they may well intensify the moral stigma often associated with these conditions It is to the trained rather than to the untrained attendants of mental patients that we would commend this book

CANCER FICTION

David Cannon was the leading surgeon in Manchester or some such place[2] He found that an implanted or spontaneous tumour in a rat could be cured by inoculating the animal with a living emulsion of cells from a rat tumour of lower virulence, especially if the inoculum were briefly titillated with weak X rays Applying these results to man, Cannon and his enthusiastic assistants, fortified with vast libations of tea, coffee, beer, and whisky, treated more than 100 cases of hopeless breast cancers in less than ten months and cured all of them, they also cured two melanotic sarcomas, one of which Cannon had, out of revenge produced by inoculation The results were finally announced to a crowded meeting in the great hall at B M.A. House which received them with great applause Such is the outline of a bright well told tale of hospital life in which there is nothing that is quite impossible and, making allowance for artistic *exaggeration*, little that is highly improbable It will amuse most doctors and nurses, and there will be a good deal of difference of opinion as to whether fiction is a fit vehicle for the subject matter

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[1] The Papyrus Ebers Translated by B Ebbell late County Medical Officer Copenhagen Levin and Munksgaard *London* Humphrey Milford Oxford University Press 1937 Pp 135 15s

[1] Home Care of the Mental Patient By Dr Arie Querido Head of the Department of Social Psychiatry Medical Service City of Amsterdam London Humphrey Milford Oxford University Press 1936 Pp 93 2s 6d

[2] A Crab was Crushed By Harvey Graham London Rich and Cowan Ltd 1937 Pp 281 7s 6d

ADDRESSES AND ORIGINAL ARTICLES

THE EXPERIMENTAL OUTLOOK IN SURGERY *

BY SIR DAVID WILKIE M D F R C S
PROFESSOR OF SURGERY UNIVERSITY OF EDINBURGH

It is difficult to assign to discoveries in medicine their rightful place in order of importance Some would place the work of Lister in demonstrating the microbic nature of wound infection and the means of preventing it by chemical or other disinfection in the premier place both as a scientific and a beneficent discovery others might dwell on the discovery of the parasite of malaria and its mosquito borne spread as a contribution of world wide significance and yet others might point to Ehrlich s work on the therapy of syphilis, and with it certain tropical diseases as inaugurating a new era of chemotherapy

HARVEY

Epoch making and beneficent as all these discoveries have proved to be they have not the fundamental significance of Harvey s contribution The discovery that the blood circulated driven onwards by the heart, was epoch making in the truest sense of that oft ill used term but it was only one product of an outlook and a method which Harvey gave to medicine To be the father of a point of view of an approach to problems which change the whole basis of our study of disease is a real distinction but when that method is the simple logical search for truth applicable to any investigation of any problem of biology the distinction is outstanding and unique Harvey's method of careful unbiased and unfettered observation the formation of a hypothesis and the testing of this by experiment has not only stood the test of time but has formed the essential basis of the contributions of all his famous successors—John Hunter Claude Bernard Pasteur Koch and Lister

To have broken loose from the bondage of medieval theory and practice and to have done it with a simplicity and yet a completeness which still commands our admiration in this lay the genius of Harvey He showed a way of discovering scientific truths His method of anatomical observation of studies in comparative anatomy and on these of constructing a hypothesis had been the method of Vesalius and to some extent of Galen but those two had relied but little on experiment—the key stone of the arch Doremberg the French medical historian said of Harvey : He considers a long time and he finishes by seeing ; he makes few experiments but they are decisive ; he uses few arguments but they are conclusive What would not his methods yield to day if applied in their noble simplicity in the innumerable opportunities which surgery offers of making observations of disease in the living human being The need for cultivating the Harveian outlook is as great to day as ever it has been and especially for those who mean to practise surgery

HUNTER

John Hunter did for surgery what Harvey did for medicine as a whole Hunter is said to have read but few books choosing the face of Nature as his instructor and his guide One book however did not escape him and it is easy to imagine the thrill with which he must first have read De Motu Cordis and the fierce ambition that it kindled in his breast The insatiable curiosity and restless activity of this perfervid Scot claimed the whole realm of Nature as their field Following closely the method of Harvey but with tenfold the zeal and tireless energy Hunter observed questioned, experimented, and thus awakened once again the scientific urge which is the stimulus to progress

Hunter has often been described as the father of modern surgery As such he founded his family on the sure foundation of a never ending quest for scientific truth His search for the secrets of life and growth gave a new significance to medical study and raised the status of surgery from that of a mere handicraft to the dignity of a science The glamour of the discoveries of Pasteur and of Lister overshadowed for a period the true worth of Hunter's contributions of late however the importance of tissue growth and reaction the influence of internal secretions and of vitamins, the significance of the soil as opposed to the seed these have taken us back to Hunter and to his search for fundamentals

What a joy to Harvey would have been a day with Hunter in his animal sheds and his museum ! He would have gone home late to bed a tired but very thankful man having seen in full fruition the tree of scientific method which he planted just a hundred years before.

It was in the anatomical and surgical class room and in the experimental laboratory of Hunter that Jenner got the outlook and the point of view which led him to test the effect of inoculating cow pox as a safeguard against small pox We thus see that the experimental outlook in surgery gave the stimulus to Jenner s great experiment in practical immunity If this happy harmony of outlook had continued unabated through the years what a wealth of useful knowledge had been gained and what a burden of suffering avoided. Alas ! for a period the sciences of surgery and of infective disease parted company to meet again after more than half a century of wandering in the wilderness

Study of Infections

There is no more fascinating study than that of the rôle of surgery in the treatment of *infections* and the part played by infection in frustrating the curative efforts of surgery For the first three-quarters of the nineteenth century the heroic *attempts of* surgeons to aid the suffering by operation became *progressively more futile as the hospitals* became infected with germs of mounting virulence It was one of the greatest and most tragic experiments the world has ever seen this proof that germs become more virulent by successive passage through susceptible human beings When J Y Simpson advocated the burning of the old hospitals and the building of temporary wooden structures in their stead he was pronouncing a logical if somewhat heavy handed, method of exterminating virulent infections

If Semmelweis had but held on when he had convinced himself that by making the students coming from the dissecting rooms wash their hands in a solution of chloride of lime before examining pregnant women he could in great measure prevent puerperal septicæmia if he could have staged a crucial experiment as Pasteur did at Chartres, how willingly would Lister have handed him the palm as the greatest benefactor of mankind. Semmelweis had the great idea and, if he had not the philosophy to withstand the inevitable repercussion which the impact of a new idea elicits from the innate conservatism of the uninspired human mind, he must ever be regarded, with the sympathy due to the misunderstood, as the forerunner of a new age in surgery.

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* A lecture delivered before the Harveian Society on March 11th 1937

Pasteur laid bare the secret. The successive steps in his work on fermentation, silkworm disease, anthrax, and rabies, the satisfying completeness of his proofs and the simplicity yet thoroughness of his experiments furnished the pattern and the implements for the experimental work on wound infection.

LISTER

When Lister, already with the idea in his mind, came to Edinburgh to study surgery under Syme, he was possessed with the thought that in the solution of this problem of wound infection lay the whole future of surgery. Several factors combined to favour his investigation. Firstly, as he repeatedly avowed, he found the atmosphere in Syme's clinique sympathetic and helpful in his work; secondly, he had already had some training in scientific methods and outlook; and thirdly, he was interested in and conversant with discoveries in the fundamental sciences and thus had read of Pasteur's remarkable experiments. Only the mind trained in the experimental method could appreciate the significance of Pasteur's work and the possibility of its application to the suppurating wounds and the pyæmia of the wards. As Sir Frederick Gowland Hopkins pointed out in his presidential address to the Royal Society, the fundamental sciences are the source from which clinical observation and clinical analysis must always derive their impulse for advance. It was in the laboratory of Pasteur that the germ theory of wound infection had its beginning; it was through the scientifically trained surgeon, versed in the literature of the fundamental sciences and capable of correlating and combining the bedside with the laboratory experiment, that the vital gap was bridged and the supreme benefit to suffering mankind conferred.

The care, the step by step advance, the personal attention to every detail of the proof, these characteristics of Lister's work were what impressed his students and the surgeons from abroad who visited his wards, both in Glasgow and in Edinburgh. His implicit faith in the victory of truth gave him the calm philosophic outlook which poor Semmelweis had lacked and which commanded attention, respect, and admiration from his students and from all but the most biased and petrified among his surgical contemporaries. It does not detract from Lister's immortal work for humanity any more than it does from Harvey's great induction, to say that it was not the work of one mind. "To perfect is to invent. All investigators inherit from their ancestors and Truth is the daughter of Time."

The discovery of the cause and the means of prevention of wound infection gave not only an immense impetus to helpful and curative surgery and an untold relief from suffering and death to those who needed operation, it gave new opportunity to both clinical and experimental research by removing one uncertain and complicating factor which heretofore had vitiated all observations and results.

The Rise of Abdominal Surgery

The history of abdominal surgery in pre-Listerian times has many interesting pages and gallant episodes. The intrepid ovariotomists, with Ephraim McDowell at their head, had in many instances been country surgeons, operating far from crowded cities and infected hospitals, and the hardy peritoneum had withstood in many cases the relatively avirulent infection introduced. The domestic type of cleanliness, practised by Lawson Tait, was so successful as almost to confuse the issue for others as it did for him. The demonstration by Lembert, also a country surgeon, that an inverting suture rendered the closure of intestinal wounds both simpler and safer, laid the foundation of gastro-intestinal surgery. Surgeons were waiting for the lifting of the ban that post-operative peritonitis had imposed. It was, therefore, not unnatural that in the early 'eighties of last century an immense amount of work should have been done on the surgery of abdominal diseases.

ALIMENTARY TRACT

The successful removal of tumours of the stomach or intestine demanded a technique, the perfection of which could only be attained by experiment, and to the patient and controlled work of Wölfler, Czerny, Gross, and Senn we owe successive steps in the building up of reliable and simple methods of anastomosis. That indefatigable student, Samuel Gross, did valuable experiments on the suture of wounds of the intestines, but it was Nicolas Senn who was the most fruitful worker among the early experimenters in gastro-intestinal anastomosis. Night after night he could be found at his experiments in a small laboratory constructed under the sidewalk of his home in Milwaukee. At medical meetings he always contributed personal experimental observations and brought with him the specimens from his experimental laboratory—a worthy descendant of Hunter and of Harvey.

In 1881—the annus mirabilis of abdominal surgery—Billroth's clinic in Vienna was the scene of the premières of many surgical procedures. Among these was partial gastrectomy for cancer, and gastro-jejunostomy, first performed by Wölfler on the suggestion of his assistant Nicoladoni in a case of irremovable carcinoma of the pyloric antrum. The zealous care with which Billroth supervised all these early operations, and the close collaboration which he encouraged between the experimental laboratory and hospital operating theatre, favoured the rapid strides which surgery made at this eventful time.

Mikulicz, one of Billroth's assistants, played a leading part in the development of abdominal surgery. As professor of surgery in Breslau, he was unceasing in his efforts to extend the scope, and especially to increase the safety, of abdominal operations. The exteriorisation of tumours of the colon and their removal by a two- or three-stage operation was introduced by Paul actually before it was by Mikulicz, and to both surgeons credit is due for a method which effected a great reduction in mortality. Mikulicz introduced the practice of giving nucleinic acid before operation to induce an artificial leucocytosis, proving by animal experiment that resistance to peritoneal infection is thereby raised. Later, in Edinburgh, it was shown that by combining the injection of vaccines of *Bacillus coli* and streptococci with the nuclein injections, the immunity to peritoneal infection could be further enhanced.

Pfannenstiel, in Kiel, showed that by injecting sterile olive oil into the peritoneum an increased local resistance to infection was brought about; indeed it became evident that any irritation or insult to the peritoneum called forth a reaction which was protective against subsequent infection. This fact constituted one of the main factors of safety in the two-stage abdominal operation in which the dangerous stage is left to be the second step

EMERGENCIES

Whilst the surgical treatment of certain acute abdominal conditions such as strangulated hernia goes back to antiquity the surgery of acute abdominal emergencies belongs to the post Listerian epoch. As such operations increased in number and as by correlation of operative findings with clinical symptoms diagnosis became more accurate there was a tendency to regard immediate operation as the panacea for all such conditions Continued clinical investigation linked up with experimental work has shown us that in certain conditions and at certain stages operation may be both meddlesome and harmful whilst in others every hour that operation is delayed adds to the risk of death

In obstruction of the bowel we have learnt to distinguish between the various fundamental types, and the cause of death in each and thus to put our treatment on a rational basis The realisation that in simple high intestinal obstruction the main lethal factor is loss of fluid and chlorides, and that if these be supplied in adequate amount life may be prolonged for weeks even if the obstruction be not relieved has made the administration of salt solution an essential first step in our treatment of such obstruction

We know that in closed loop obstruction or in strangulation the tendency to rapid necrosis and infection of the wall with gross perforation or bacterial permeation and peritonitis, makes not only the need for early operation clamant but the need for radical surgery clear A clinical impression that when in the least doubt it was wiser to resect a strangulated but possibly still viable loop has received abundant confirmation from the experimental laboratory Further in cases of strangulation it has been shown that the fluid exuding into the peritoneal cavity from the strangulated loop contains toxic elements and its removal by suction is desirable

On the other hand in inflammatory lesions within the abdomen the recourse to active surgical interference which was the rule thirty years ago has as the result of clear experimental evidence given place to a much more expectant and conservative régime In cases of pelvic inflammation in walled off appendicular inflammation of some days duration in acute cholecystitis and even in acute pancreatitis we tend to be conservative until we see the clear indication for active surgery

Surgery of Disordered Physiology

Perhaps the most striking development in twentieth century surgery is the extension of the field from the treatment of trauma deformity tumour growth and infection to that of disordered physiological action

First in importance and frequency is the resection of the thyroid gland for various forms of toxic goitre To Kocher of Berne we owe the pioneer work in thyroid surgery He reported the condition of cachexia strumipriva which followed total extirpation of the thyroid gland and together with Reverdin with Schiff and with Horsley in this country carried out those experiments that may be said to form the real starting point of our knowledge of the ductless glands The story of the first very hæmorrhagic and dangerous operations for exophthalmic goitre which had resisted all forms of medical treatment; the frequent post operative deaths in a crisis of thyrotoxicosis complicated by blood loss the evolution of pre-operative measures and operative technique by Crile and Charles Mayo and finally the demonstration of the immense value of iodine as a pre-operative medicament by Plummer the earlier operation and the vanishing mortality these facts form a romance in surgery Indeed so great has been the success of subtotal thyroidectomy for toxic goitre—this colossal surgical experiment on the human being—that it has I think, probably retarded the investigation of the essential nature of this disease. The fame of the operation will be fleeting and will seem strange indeed to our successors That some means of controlling thyroid activity short of the heavy handed method of surgical resection will be found cannot be doubted I trust it may be found in some surgical research department

The removal of the thyroid gland in cases of cardiac disease with decompensation or angina is another example of using physiological knowledge to mitigate the effects of disease. The thyroid being regarded as the metabolic pacemaker and cardiac decompensation and angina both being regarded as evidences that the heart function is on a lower plane than that of the body as a whole Blumgart argued that by removing the thyroid gland and so lowering metabolism the body would be brought down to the level of the heart The results following this operation particularly in cases of angina, are such as to warrant a continued trial.

A. von Eiselsberg who for so long held the chair of surgery in Vienna, was an outstanding example of that band of famous surgeons who have graduated in the experimental field His early work on tetany and the parathyroids, and on the pituitary gland, not only marked him out as a keen observer and a highly skilled technician but formed the basis for a new avenue of advance in surgery

The successful removal of simple parathyroid tumours in cases of generalised osteitis fibrosa cystica of tumours of the islets of Langerhans in cases of recurring attacks of hypoglycæmia and of adrenal tumours in Cushing's syndrome are all examples of a subtler type of surgery based on a knowledge of the fundamental sciences

The surgery of the sympathetic nervous system starting with the work of Leriche on peripheral vascular disorders extended to the relief of angina pectoris of incoordinated action in the colon in Hirschsprung's disease and later to achalasia of the œsophagus this branch of surgical enterprise is still in its experimental stage and the rigid standards of the experimental laboratory are necessary in assessing its results

It is becoming increasingly evident that certain lesions that up till now have been regarded as requiring operative surgery will some time and possibly quite soon come within the sphere of hormone therapy Undescended testicle in the young boy has been shown to descend after repeated administration of gonadotropic hormone Some encouraging results have already been obtained in cases of senile enlargement of the prostate by the injection of testosterone or male hormone Irregular involution or cystic disease of the breast has yielded to treatment with follicular hormone It is obvious that in future our treatment of many disorders will be more subtle and less radical but in this wide and fascinating field of hormone therapy it is obvious that the need for the most careful scientific work and for the records of the trained observer is very great There is a real danger of practice leaving proof behind and the practitioner of medicine using hormone therapy without real knowledge or due discrimination.

Cellular Surgery

To Halsted, perhaps more than to any other man, do we owe the advances in surgery of the last three decades. Halsted had a long apprenticeship in the experimental laboratory where he did fundamental work. His researches on the healing of wounds proved to him the importance of accurate apposition of wound surfaces, leaving no dead space, and the equal importance of leaving a minimum of bruised or dead tissue in the wound, no mass ligatures, no forcible retraction, no ragged edges. He showed that the body will combat successfully a certain amount of infection in a wound if these rules be observed. Kocher was working on the same lines and was, in Europe, training a band of surgeons to respect the living cell and the fragile tissues just as Halsted was founding in America a school of meticulous and delicate surgery which has made his pupils the foremost surgeons of their day.

Macewen, Horsley, and Kocher did pioneer work in cerebro-spinal surgery, but it was the remarkable advances based on Halsted's technique, made by Cushing and his pupils that opened one of the great chapters in surgical history. The demonstration that if blood and fluid loss be minimised, and what does occur be replaced, an operation within the skull may be carried on for even eight or nine hours without dangerous deterioration in the patient's general condition, has enlarged the field of cerebro-spinal surgery to a degree undreamed of thirty years ago. The very greatest credit is due to Cushing and to all his pupils for combining the most searching preliminary investigations with delicate, yet enterprising, operative methods. There is no field where greater promise still remains for furthering knowledge of function, no less than of extending the bounds of radical surgery, than in the cerebro-spinal system, and no band of men with the experimental outlook more fully developed than the group of highly skilled surgeons who have devoted their lives to this difficult and exacting specialty.

In this country the movement in surgical thought and practice, initiated by Halsted, reached its zenith in Moynihan, whose respect for living tissues was evinced at every turn and who brought not only gentleness but art to bear on every branch of operative surgery. Just as Virchow was the founder of cellular pathology so these men were the founders of cellular surgery. The surgeon who shrinks from damaging one cell more than is necessary is not only going to have smooth and kindly healing in the wounds he must needs inflict, but is to save his patients some degree of the toxæmia that inevitably results from the autolysis of damaged cells.

When we think of cells let us not visualise the fixed and stained structures of the histological laboratory. Reagents confer on colloidal matter an appearance which differs in most cases in kind and in some cases in degree from the initial structure. Let us think rather of the living cell as we have seen it in the tissue culture medium, a mobile mass, charged with a restless energy, as a "mixture of colloidal slimes of varying degrees of fluidity," as a body like the protozoön which may disrupt explosively if the surface membrane be ruptured. If we think thus of the tissues we handle we will instinctively acquire that reverence for those cellular structures—essential parts of that infinitely complex mechanism, the human body—which will, in Moynihan's words, make every operation a veritable sacrament.

Surgery in Infections

In no branch of surgery have the lessons of the laboratory and the experimental outlook been so salutary as in that of acute infective lesions. The study of the inflammatory process, and the reaction of the body to infection as seen in lowly forms of life and in the laboratory animal, led to an ever increasing respect for the capacity of the host to deal unaided with infection. Metchnikoff's "Comparative Pathology of Inflammation" is a surgical primer. Occasionally a very virulent infection will paralyse defence and sweep all barriers aside. If trauma be added to infection a handicap is surely added to the work of the defence. When infection is established the rational policy of treatment is defensive and conservative, local offensive measures to eradicate infection usually being ineffective for this object and mischievous by breaking clumsily through Nature's barriers.

The lessons in immunity, in which the enterprising science of bacteriology has been so fruitful, all point to a supporting and conservative line of treatment as the most helpful during the early acute phases of local infections. The passive hyperæmic treatment of August Bier, based on an exemplary piece of clinical research, has stood the test of time and is one of the simplest and most valuable methods we possess of treating virulent acute infections. The damming back the tide of infection until the immunity reaction is under way, the aid to the local defensive mechanism and the relief of pain, which properly applied passive hyperæmia procures, will ensure for it a lasting place among therapeutic agents.

The return to the conservative line of treatment for diffuse peritonitis—starvation, morphia, local heat, fluid by intravenous drip, and an empty stomach by an in-dwelling duodenal tube—has lowered the mortality and confirmed the findings of the laboratory.

The occlusive method of treating acute infective lesions—e.g., boils, carbuncles, and even osteomyelitis—has been vindicated by results, and forms an interesting chapter in surgical history—the conversion of the surgeon from the mechanical to the biological point of view.

The valuable work leading to the improvement of antitoxic sera has placed in our hands a telling weapon of defence if used in sufficient dosage at an early stage, before toxic degenerative changes in vital organs have occurred. The discovery of a drug, Prontosil, which will destroy micro-organisms in vivo without poisoning the tissues, is a very significant observation fulfilling in some measure the long-sought ideal of a therapia sterilizans magna. These advances all tend to show that the biologically minded surgeon who has reaped the lessons of immunity and has graduated in the fundamental sciences has still many bloodless but no less glorious victories to win.

Need for Trained Observers

Surgery offers opportunities, which are denied to medicine, of seeing pathology in the making and in its living form. Too often at operation the surgeon is more concerned with what he can do than with what he can see. We see but what we look for, and only the dissatisfied spirit and the strictly truthful, unbiased and yet observant mind can see the new and appreciate the significance of what is seen. To train surgeons whose chief interest is the science rather than the handicraft of surgery is the leading need of to-day That a part of this training is best acquired in the experimental laboratory is to my mind beyond doubt The planning of experiments the elimination of all the complicating factors which almost inevitably arise to confuse the issue the need for meticulous care for accurate records and for adequate control all these factors combine to sharpen both the outlook and the critical faculty of the young surgeon He may make no discovery nor lay bare any fresh truth but the training will at least help to prevent him from establishing false doctrines and practices based on loose or faulty observation. Is not the difficulty in establishing a new truth the fact that the field is littered and encumbered by the prejudice and practice instituted and upheld by unscientific men?

When twelve years ago we opened a department of experimental surgery in Edinburgh it was with the object of training surgical observers no less than of directly advancing scientific truth To only a few is given that intuition which is the indispensable cutting edge of scientific as well as of intellectual inquiry but to many may be given that training and outlook which make reception and appreciation of scientific truth both ready and responsive Meetings and discussions form an essential feature of a surgical research department To present the results of a piece of work be it from the hospital or the laboratory before a group of scientific colleagues demands the crystallisation of ideas a logical sequence both in proof and in presentation and an elimination of non-essentials invaluable lessons in the training of a young clinical teacher Nothing could be more in keeping with the spirit of Harvey than the friendly rivalry in investigative work of the young men in a medical school. Without this spirit in its junior men the future of a school is bare of promise and of hope

The development in the Royal College of Surgeons of England of a centre of experimental surgical research and the Buckston Browne experimental farm at Downe both under the able and enterprising direction of Dr John Beattie is the final proof that we in this country now recognise the need for the experimental outlook in surgery

The study of clinical science developed and fostered with such success by Sir Thomas Lewis has so far mainly concerned itself with the problems of internal medicine Intensive clinical study can furnish data which the laboratory cannot provide and when furnished there is no need for translation to the human form The same degree of concentrated study applied to the pre-operative and post-operative phenomena in surgical cases offers rich promise of significant results If this clinical study can at the same time be linked-up and correlated with laboratory experiment we would seem to have a very powerful instrument for furthering our knowledge of disease

Specialism

It would appear that we have reached a stage in the advance of medicine at which without intensive study of one field it is difficult to contribute anything that is new to the sum of knowledge Convincing evidence could be led to prove how concentration makes for progress—e g how in disease of the urinary system in which at one time diagnosis was notoriously inaccurate and vague specialisation and focused ingenuity have now made diagnosis in this field the most accurate in the whole domain of surgery In regard to neurological surgery and to surgery of the chest similar evidence could be produced. It is very desirable however and especially in our teaching schools that we all begin our training on the broadest lines remembering that the height of the pyramid is governed largely by the breadth of its base

Most of the important advances in medicine even in recent years have been systemic and not regional in their scope and have been contributed by workers in the wider field. The comparative sterility of effort of such numbers of our intensive clinical workers in their narrow fields is without question a lack of education and training in the fundamental sciences

It may well be that the discoveries of medical science in the next few years will cut horizontally through many of our specialties and a reorientation of the field may be desirable The clear cut distinction between medicine and surgery may go and the operating physician in various specialties may find new lines for the advance of knowledge. As the need of the knife becomes less as assuredly it will the need for breadth of training in the surgeon will increase with equal steps. Possibly in these far-off emancipated days the disparity of remuneration for skilled advice and operative treatment will be less flagrant than it is to-day

Present Needs of Research

For some years now there has been a tendency in some quarters to regard the greatest need of research in this country as endowment If we could but have research institutes with handsome scholarships for younger workers science would flourish and all would be well! I believe this view to be fallacious It is true that accommodation and salaries are necessary but they are there already It is men and ideas that are lacking Modern research does doubtless require some more elaborate apparatus than when simpler problems were being solved but as Claude Bernard said Experimenters do not grow great by the number and complexity of the instruments they use it is really the other way The great experimenters made great discoveries by means of simple instruments

What we require most of all to-day is to encourage the occasional student who has the flair for investigative work to pursue his bent and not be led off to practice The man with ideas and the urge to test them is an asset which we never can afford to waste He should be trained and encouraged. Men are incomparably more valuable than institutes The man without the institute will probably somehow carry on his work the institute without the man is a standing mockery Even the method of experiment may be vain in the hands of the uninspired As Bernard said The experimental method cannot give new and fruitful ideas to those who have none it can only serve to guide the ideas of men who have them to direct their ideas and to develop them so as to get the best possible results As only what has been sown in the ground will ever grow in it so nothing will be developed by the experimental method except the ideas submitted to it The method itself gives birth to nothing

The scheme of the Medical Research Council for awarding studentships and fellowships in research the former for the training of likely men in methods of investigation the latter for continuing in research those who have proved their worth, t
offers promise of catching at a ec
age the young men with investigative
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Clinical Refreshment

The advances in pure science and the triumphs of the laboratory have been so striking in the past decade, the methods used have become so specialised and intricate, that the laboratory worker has tended to become a man apart, whose interests, indeed whose language and vocabulary, are little understood by the clinician For the advance of medicine I believe that this is a real misfortune Whilst not denying that every discovery of truth is valuable and may sooner or later contribute directly or indirectly to human welfare, I am impressed by the fact that the most beneficent researches have been stimulated by some clinical incentive and the call of human need Every one of Pasteur's great discoveries was based on ad hoc work, a practical need giving the urge and stimulus to continued effort The discovery of insulin had a clinical beginning and furnishes an excellent example of the value of correlated laboratory and clinical research

I believe that the work of many of our laboratories would be revivified and made more fruitful if their highly skilled technical workers could be refreshed by contact with the problems which confront us daily in the medical and surgical wards of all our teaching hospitals A regular system of ward rounds at stated periods and special consultations on unusual cases, where the laboratory workers become aware of the practical problems of the clinician and the latter learn not only new facts of scientific import but the need to maintain a high and uniform standard of observation and of record, such a system although difficult to organise would, I am sure, be fruitful in result

De Generatione

Harvey's work on the developing ovum was not perhaps on a par with his great discovery but it showed his sustained fondness for a subject which in these latter days has acquired peculiar interest and importance The microscopic study of the early ovum and later the reconstructive method of investigation have given us much information on the nature and the order of the developmental process But what delight to both Harvey and to Hunter would the researches in experimental embryology of the last two decades have brought! The work of Driesch, of Spemann, of Holtfreter, of Needham and Waddington has not only supplied evidence of intense academic interest but has given us a possible clue to the understanding of malignant tumour growth Spemann showed in the case of the newt that up to a certain stage of gastrulation the fates of most of the embryonic regions are not irrevocably determined A piece of presumptive neural tube material removed from one embryo and grafted into another will turn into external gills if it happen to be grafted into the presumptive gill region of the latter Contrariwise a piece of presumptive skin if grafted into a suitable region of the presumptive nerve tube of a second embryo will in due course develop into brain and spinal cord Up to this stage of gastrulation the cells of various regions are still plastic or pluripotent even to the extent of mesoderm and ectoderm being interchangeable This early period of plasticity is followed by one of rigidity, when a graft will continue to differentiate according to its innate determination and not in accordance with the new situation in which it has artificially been placed One region of the amphibian embryo is not plastic during the early period of development, this is the region of the dorsal lip of the blastopore When this lip of the blastopore of the newt *Triton cristatus* was transplanted into the indifferent ectoderm of an embryo of *Triton tæniatus*, both in the early gastrula stage, it induced the formation of a new embryonic axis—i e, two embryos were produced where normally one should have been formed Spemann called this centre in the dorsal lip of the blastopore the "organisation centre" It was then shown that even if the transplanted tissue was crushed and disorganised it could still organise the constituent morphological parts of a second embryo suggesting that the organiser was chemical in nature

The substance retained its power if narcotised or even if exposed to heat Whilst in the living state only this one area possesses organiser properties, other areas if killed, boiled, or denatured by alcohol possess inductor capacity

This organiser hormone was then shown to be sterolic in character and was not even specific for the species of animal It came into line with the compounds also of sterol like structure (*a*) the sex hormones, (*b*) the cancer producing hydrocarbons, and (*c*) vitamin D When it was shown by Waddington and Needham that the implantation of some of the synthetic hydrocarbons used by Kennaway and Cook into the newt gastrula caused the induction of perfect neural tubes, the lack of specificity of hormones was definitely proved.

In the process of development we have now therefore the conception of a sterol like substance being liberated at a given point in the developing system and radiating its organising power from that spot The initiation of wound healing probably depends on a similar chemical stimulus In fact it has been said "the plans of living systems are written in chemical molecular structure, a language with a great wealth of expression"

How far this exciting [illegible] surgery of the young embryo will take us as yet we cannot say, but it is obvious that a new and exciting chapter has opened de generatione

Ex Corde Caritas

Harvey bequeathed to the profession a lesson of another order to that of his discovery in physiology—his injunction to his professional brethren to meet on friendly social terms, to observe that consideration for one another's interests as conduces to harmony and befits the dignity of a great profession To Harvey we owe the inspiration of our great societies, and as their meetings play no small part in maintaining the standard and furthering the science of medicine we must ever hold his name in high esteem in our gatherings and in our colleges

The good name of British surgery, which never stood higher than in the past three decades of its history, owes much to the policy of sharing knowledge and experience, of abandoning the parochially minded exclusiveness of individual schools, of travel, of seeing each other's methods, and of encouraging the younger men to pursue investigative work The various travelling clubs, the Association of Surgeons, the broadened scope and outlook of the Royal Colleges, these are all in keeping with Harvey's wish for concord, mutual betterment, and friendliness That at our meetings an ever increasing value should be placed on accurate observation, logical deduction and, where possible, on proof by controlled experiment, that clear thinking and thus simple, terse, and clear expression should be the standards we demand, these must be our perennial tribute to the memory of one who set for all time an example of the value of experiment in medicine and of dignity, of amity, and of mutual friendliness among the members of a great profession

THE BLOOD PRESSURE IN THE YEARS FOLLOWING RECOVERY FROM CORONARY THROMBOSIS

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In the past twenty years there have been many references to the fall in blood pressure that is a prominent feature of the period immediately following the onset of an attack of coronary thrombosis but few to its behaviour in the months and years after survival The subject seems worthy of detailed study and the present investigation was primarily undertaken in an endeavour to plot from a representative group the actual course of the blood pressure in the years following the attack At the same time a study was made of the incidence of hypertension in coronary thrombosis

GENERAL DESCRIPTION OF CASES STUDIED

The series comprised 212 patients all of whom had survived the attack for at least three months and many for several years They were collected chiefly from the records of the cardiac department of the London Hospital and from a consulting practice; a few are from the National Hospital for Diseases of the Heart There were 192 males and 20 females whose distribution according to age is set out in Table I Those selected for the series were such as were found to have blood pressure records extending over a period of at least a few months after coronary thrombosis The average length of time elapsing between the onset of the attack and the end of the period of observation was 4 15 years Almost half the series (102 cases) are still under observation at the time of writing and 65 cases almost a third are known to have died The remaining 45 could not be traced further after having been followed for various lengths of time almost two thirds of these disappeared during the first two years The patients were drawn from all social classes and are believed to present a fair picture of the whole group of survivors

TABLE I

Distribution of 212 Patients with Coronary Thrombosis According to Sex and Age at Time of First Attack

Age-group	Male.	Female.	Total No.	Total Per cent.
Under 40	1 (aged 20)		1	0 5
40–49	36	1	37	17 4
50–59	79	14	93	43·9
60–69	59	4	63	29·7
70–79	16	1	17	8·0
Over 80	1 (aged 81)		1	0 5
Totals	192 (90 1)	20 (9 9%)	212	100·0

This inquiry was a clinical one and therefore subject to certain limitations Chief among these was that the small number of necropsies made it necessary to rely upon clinical diagnosis Thus there were not included any of the silent cases that have been found in at least two necropsy series (Gille and Rykert 1935 Saphir, Priest Hamburger and Katz 1935) to comprise more than a third of the total number Besides the invariable history of pain of cardiac distribution lasting for at least an hour and accompanied by some shock the following conclusive signs were found in 174 (82 per cent) of our patients pericardial rub in 15 fever or leucocytosis in 55; electrocardiographic changes in the Q R S complex, S–T interval or T wave occurring over weeks or months in 146 and low systolic pressure in 34 Having regard to the fact that rest in bed alone will cause a considerable drop in blood pressure (Addis 1922) this last sign was used as corroborative evidence only when there was found a systolic reading below 100 mm Hg or else a reading less than two thirds that of others taken within 6 months The finding of incidental disease did not exclude a case from the series

INCIDENCE OF HYPERTENSION IN PUBLISHED SERIES

Figures showing the true incidence of hypertension before coronary thrombosis are difficult to obtain Most patients do not seek medical advice until after the attack and it was probably during this early period that many of the blood pressure readings were made in the reported cases assembled in Table II As most often at that time the blood pressure falls and only very exceptionally rises for a brief period during the first day or two (Hochrein 1932) it follows that these figures tell only part of the story The association of lowering of the blood pressure with advanced coronary sclerosis but without clinical evidence of thrombosis has been frequently noted (Fahr 1935 Bell and Clawson 1928 Horine Weiss and Beard 1932), so that the finding of a normal pressure before the attack does not rule out an earlier hypertension It is not the purpose of this paper to discuss whether this drop is due to an effect on the myocardium or is part of a general state preceding arterial thrombosis; in old people it has been observed to precede arterial thrombosis in other parts of the body (Dumas 1925) Of the present series 15 had had blood pressure readings over a period of several years before the attack the last record being in the year immediately preceding it; although the average tendency was only slightly downwards it is significant that in 3 (20 per cent) this last reading was normal despite previous hypertension

TABLE II

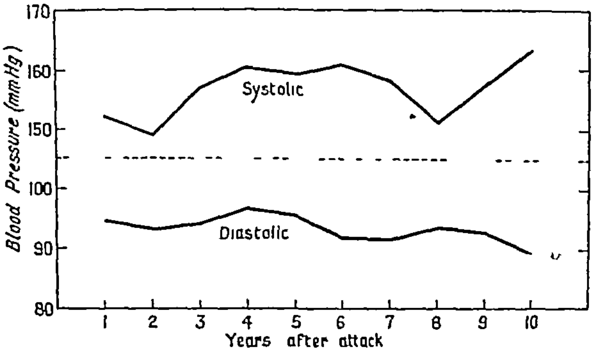
Incidence of Known Hypertension in Patients with Coronary Thrombosis

Authors.	Criteria of hypertension (mm of Hg)	Cases of coronary thrombosis.	Cases of hypertension	Incidence of hypertension per cent.
Barnes and Ball	S 150 or D 100	42	24	57
Boas and Donner	S 150	57		25
Conner and Holt	None given	271	93	35
Cowan and Ritchie	S 150	58	28	48
Eschbach	None given	50	*	75
Levine.	S 150 or D 100	148	44	30
White and Bland	S 160 or D 110	200	50	25
Present series.	S 160 or D 100	212	155	73

* Readings at first examination after attack.

The incidence of high blood pressure in cases destined to get coronary thrombosis is probably not different from that in coronary arterio-sclerosis as a whole

Evans, Ambler and Dodson (1933) in a review of 507 autopsies on cases of coronary disease all of which showed recent coronary occlusion, evidence of healed infarction, or diffuse myocardial fibrosis, found almost invariably cardiac hypertrophy, chiefly of the left ventricle and presumably due to hypertension In 136 cases that died from coronary disease, Bell and Clawson (1928) found satisfactory evidence that approximately 68 per cent were associated with hypertension (systolic pressure of 150 mm) Fahr (1935) discusses the findings of Bell and Clawson in 420 cases of primary hypertension arguing from the finding that 90 per cent of the hearts of all patients dying from hypertension show some coronary arterio sclerosis, and that Bell and Clawson's criteria for hypertrophy (450 g and 500 g respectively for female and male) are unnecessarily severe, he concluded that, according to his own standards, actually 90 per cent of their coronary sclerosis cases showed evidence of association with hypertension Bell (1934) himself puts it at 75 per cent Besides quoting what he found to be the incidence of hypertension based on actual readings (Table II), Levine (1929) estimated that it had been present in the majority of his cases, while Conner and Holt (1930) formed the impression that coronary thrombosis was found among persons with normal blood pressure almost as frequently as among those with hypertension High blood pressure was found by Fahr (1935) in 80 per cent of his cases of coronary sclerosis, and he says that in his opinion "it can conservatively be estimated that 75 per cent of all patients with coronary disease at some time or other have had high blood pressure" (criteria 150/90 mm)



Average course of systolic and diastolic blood pressures during the ten years after a first attack of coronary thrombosis from observations in 212 cases (see Table II)

INCIDENCE OF HYPERTENSION IN PRESENT SERIES

For the purpose of the present investigation the hypertension level was arbitrarily fixed at 160 mm Hg systolic and/or 100 mm diastolic (Diastolic pressure was read at the fourth phase, namely, the point at which the loud snapping sounds become muffled) Most clinicians will agree that this level is sufficiently high, yet many observers, particularly American, are inclined to believe that the upper limit of normal is lower than this The evidence derived from the authors already quoted, if it were expressed in figures based on this standard (160/100 mm) would probably indicate the incidence of hypertension in coronary thrombosis subjects as being from 60 to 70 per cent

In the series of 212 cases here investigated the hypertensive group numbered 155, 73 per cent of the total The group consisted of all those that at any time during the period of observation, either prior to or subsequent to the attack, showed a reading at or higher than the levels quoted above—i e , 160 mm systolic or 100 mm diastolic There were 30 cases included though hypertension had been observed on one occasion only, but borderline readings were additionally obtained in most of them Any error here is more than counterbalanced by the fact that the non hypertensive group undoubtedly contained cases, which, if readings before the attack had been available, would be found then to have had raised pressure , as evidence in support of this 24 (42 per cent) of the non hypertensive group of 57 cases had cardiac enlargement

The finding that 73 per cent of the whole series gave actual hypertensive readings is considerably in excess of the reported figures quoted in Table II This is largely due to the fact that those series included cases that died shortly after the attack, while in mine high readings were not recorded in 32 of the 155 cases until after the lapse of at least a year, and in one case not until after 14 years That the percentage of previous hypertensives closely approximates to this figure for the whole series is supported by the finding that in the smaller group of 66 cases in which the blood pressure before the attack was actually known, it had been high in 45 (68 per cent) Further evidence is forthcoming from a separate group of 100 unselected patients with angina of effort—presumptive evidence of coronary sclerosis—in none of whom, so far as is known, there had ever been an attack of coronary thrombosis, here the incidence of hypertension was 69 per cent

In 192 cases records taken during the year immediately after the attack were available Among these, 104 (54 per cent) showed hypertensive readings during this period, and in 28 (14 6 per cent) the systolic blood pressure reached or exceeded 200 mm These figures understate the situation, for in 32 of the group the only available readings were made during the month immediately following the attack, when the blood pressure need not necessarily have recovered from the acute stage The percentage of cases showing hypertension in each succeeding year increased fairly steadily until in the 10th year it was 72 per cent

Age and Sex—Hypertension was found in only 37 per cent of the group under 50 years of age at the time of the attack, and in 78–84 per cent of those in the sixth, seventh, and eighth decades All the female patients, except one who was under 50, were hypertensives

COURSE OF THE BLOOD PRESSURE FOLLOWING RECOVERY FROM THE ATTACK

In compiling a chart to show the course of the blood pressure for the whole series (see Figure and Table III), an average was first taken of all the records available in an individual case at any time during each separate year following the attack If only one reading were available for the year in question, that was used From these figures the average during each year

TABLE III

Average Course of Blood Pressure After Coronary Thrombosis (212 *Cases*)

Year after attack	Number of cases observed	Aver blood pressure		Year after attack	Number of cases observed	Aver blood pressure	
		Syst	Diast			Syst	Diast.
		mm Hg				mm Hg	
1st*	100	152·2	94·7	6th	25	160·9	91·9
2nd	89	149·1	93·6	7th	13	158·2	91·5
3rd	55	157·0	94·1	8th	15	151·2	93·2
4th	55	160·4	96·6	9th	9	157·2	92·5
5th	40	159·5	95·7	10th	7	163·6	88·9

* Exclusive of 1st month following attack
Syst = systolic. Diast. = diastolic.

was computed for 10 years the number of observations in patients surviving longer than this is too small to give accurate conclusions The first year figures do not include readings taken during the month immediately following the onset of the attack Similarly where further attacks of coronary thrombosis occurred all readings made within the month subsequent to such attacks were excluded this was done so as not to distort the curve during the later years when the total number of cases was not large Even so the noticeable drop during the eighth year was doubtless due to the fact that almost half the cases on which was based the average for that year had recently sustained another attack Table III also indicates the number of cases contributing to the average for each year Unfortunately records for more than two or three consecutive years were available in only a few cases Although this is a defect in that the averages from year to year do not necessarily include the same cases it is felt that there is a large enough number to compensate for this In the whole series 96 per cent first contributed to the chart not later than the second year and thus the possibility was eliminated of late introduction becoming a disturbing factor

During the ten year period the average systolic blood pressure rose from 152 2 mm during the first year (not including the month immediately following the attack) to 163 6 mm during the tenth year The steepest rise was during the first two years and probably indicates recovery from the attack The diastolic pressure showed little change during the

TABLE IV

Course of Blood Pressure following Coronary Thrombosis in Cases where Height was Known Before the Attack

Sex.	Age at attack.	Reading before attack	Lowest reading during 1st month after attack	Average of blood pressure readings during—					
				1st year	2nd year	3rd year	4th year	5th year	6th year
M	54	100/—	—	105/115	195/115	—	15/130	190/110	100/120 (a)
M.	66	175/110	13 /85	160/110 D					
M	6	180/—	135/80	135/85	140/90	—	—	D	
M.	64	175/75	190/100	193/105	—	—	—	—	150/75 (b)
M	67	160/—	125/85	145/—	—	—	—	—	—
M	58	170/90	—	160/110	D				
M	61	175/100	135/90	145/90	—	—	—	—	
M	49	120/85	—	100/60	—	D			
M.	63	225/140	135/100	175/115 D					
F	52	150/95	95/80	110/90	140/90	165/100	—	—	
M	61	175/—	135/—	170/110	175/110	205/115	D		
M	40	165/120	1 0/85	190/120	175/110 D				
M	60	140/—	115/80	125/80	—	—	—	1 0/100	1 0/90
M	65	190/100	1 0/70	—	—	—	—	—	
M	60	185/—	130/—	1 0/120	190/130	D			
M.	74	165/85	—	160/90 D					
M	74	200/—	105/100	—	180/110	135/110	140/90	170/100	170/100 (c)
M	56	180/100	—	130/95					
M.	58	210/90	120/80	150/95	180/105	—	—	—	— (c)
M	53	190/105	—	180/100	—	—	—	—	D
M.	61	200/130	165/105	185/120	—	—	—	—	190/120 (c)
M.	58	220/130	220/1 0	160/105	—	—	—	—	D
M	52	165/95	—	—	150/90				
M.	60	215/115	170/110	—	—	—	185/125	—	
M	68	160/95	1 0/70	125/75					
M.	6	220/130	160/90	185/120					
M.	52	160/95	150/90	—	215/115				
M.	70	210/125	130/75	130/80 D					
F	54	200/130	130/80	190/110					
M.	62	180/—	130/80	100/100					
F	5	250/—	—	165/105					
M	55	135/85	125/80	—	125/80				
M	43	130/80	—	—	140/—	D			
M.	5	170/—	120/—	160/105					
M	49	110/75	140/80	135/83	115/75	1 0/70	—	—	— (d)
M	54	185/120	120/85	125/85	—	—	120/80		
M	59	130/80	115/90	125/80	130/80	—	—	—	1 0/90 D
M	6	120/85	10 /73	—	—	—	130/75		
M.	71	250/—	100/105	210/105 D					
M	51	165/95	100/90	—	—	—	—	—	— (e)
M	58	135/80	—	—		135/80	110/100	100/90	— (c)
M	67	180/—	115/80	140/85	160/95	1 0/70 D			
M	56	170/—	—	110/75					
M	47	130/85	1 0/75	155/93					
M	62	140/90	70/50	125/80	—				
M	[illegible]	165/85	—	150/9	150/90	140/90	165/100		
M	55	16 /105	165/110	—	—	200/110	200/113	170/10	
F	66	215/110	150/60	1 0/80					
M	58	190/95	—	—	—	185/90	165/95		
M	67	175/100	130/80	140/95	145/90 D				
M	41	140/80	115/73	130/80	1 0/80	120/ 5	130/85		
M	77	190/110	—	1 5/105					
M	63	150/95	—	185/110	—	205/1 0	200/110	2 0/15	
M.	60	19 /—	140/85	145/95	170/100	—	—	135 90	
M	50	155/110	—	155/100	165/115	160/110	170/120	175/125	165/110
M	6	180/110	140 90	180/100	—	—	160/90		
F	63	200/—	130 —	1 /1 5	—	—	170/100		
M	45	1 5/95	90/70	115/80	120/90	D			
M	47	115/105	145/90	160/10	—	—	—		— (f)
M	81	125/90	110/75	115/65					
M	63	155/—	—	1 0/80	1 0/75				
M	59	155/95	—	125/45					
M	61	160/—	90/30	145/85	—	—			
M	58	145/80	100/ 5	125/75	12 /85	140/90	110/90 D		
M	53	135/80	—	—	150/110	1 5/110			
M	43	1 5/80	125/80	125 80	—	1 5/90	1 5/90	—	— (g)

— = another attack of coronary thrombosis D = death

(a) 7th year 100/115 (b) th year 160/85 8th 16 /85, 9th 165/90 10th 1 5/85; died in 10th year (c) Died in th year (d) 9th year 1 0/80 (e) 10th year 105/90 (f) Third attack in 9th year; B P one month later 100/— (g) th year 1 8th 1 /80 second attack in 9th year; B P three months later 115/75.

whole period, but in the main a tendency to drop slightly

It has been shown that in healthy persons (Symonds 1923), and in groups of unselected patients (Gager 1930), there is a gradual but steady rise in systolic pressure with increasing age This rise is maintained until the ninth decade (Bowes 1917, Richter 1925) In healthy adults whose average pressure is low the increase is from 1 to 5 mm of mercury every ten years In unselected groups containing a fair proportion of hypertensives the average pressure is of course higher, and the increase during each decade is rather more These findings make it highly probable that the slight rise found in the average systolic pressure in the present series is little if any more than is normally expected as a result of increasing age The slightly lower diastolic pressure at the end of the ten year period is commonly found after middle age, and is believed to be due to the progressive loss of elasticity in the aorta and great vessels resulting from arterio sclerosis (Wiggers 1932)

If it be accepted (see below) that the average blood pressure for the whole series before the attack is in the neighbourhood of 170/100 mm , it is obvious that *on the average* the prior level is not reached during the ten years after it Yet it was found that in 20 of the 66 cases in which the prior height of the blood pressure was known, this level was actually reached or exceeded There were 4 of the 20 who were non-hypertensives, and of the remaining 16 there were only 3 in which the subsequent rise was greatly in excess of the record before the attack

EFFECT OF AGE

When the course of the blood pressure was plotted by age groups, it was found that the levels of both the systolic and diastolic pressures of those patients in whom the onset of the attack was in the 5th decade were appreciable lower throughout than those of the whole series The curves for the 6th, 7th, and 8th decades on the other hand followed each other closely for the first few years, after which there was a tendency for the older groups to rise more abruptly than the younger ones

THE BLOOD PRESSURE IN CASES WITH READINGS BEFORE THE ATTACK

In Table IV may be followed the course of the blood pressure in a representative group of patients in whom the blood pressure before the attack had been recorded , subsequent records could then be compared with these previous ones The figures in the table show the averages (to the nearest 5 mm of mercury) of all blood pressure records taken during each year indicated , in compiling the Figure, all records taken within a month following an attack were omitted,

There were 66 cases in the group Hypertension before the attack was found in 45 (68 per cent), the systolic pressure in 16 cases having been 200 mm or higher The average prior height of the blood pressure was 171/99 mm A trial chart prepared from the 66 cases in the same manner as was adopted in compiling the Figure revealed that for the first four years (during which period the number of cases was large enough for purposes of comparison) the height and course of the blood pressure followed so closely that of the whole series as to suggest that the levels just quoted, namely, 171/99 mm , were actually those of the whole series before the attack Further evidence in support of this comes from the separate group of 100 cases of angina pectoris referred to above where the average height proved to be 170/98 mm

The lowest levels recorded during the first month after the attack are also shown in Table IV These were not necessarily made at the time of the greatest drop To investigate the blood pressure during the first month was not one of the purposes of the present investigation, but observations on 144 of the whole series during this period led to the general impression that, for cases of coronary thrombosis surviving the attack, the behaviour of the blood pressure during the first month is without ultimate significance This has also been the experience of Hochrein and Schneyer (1936)

In only 5 out of 39 cases of prior hypertension did the blood pressure fail to regain hypertensive levels within two years of the attack In 14 cases out of the 66 in the group, the height of the systolic blood pressure was at some time following the attack known to have exceeded the prior height by more than 10 mm , 4 of these cases, however, were never hypertensive

SUMMARY

An analysis was made of the blood-pressure findings in 212 patients who survived an attack of coronary thrombosis by at least three months The incidence of hypertension (160 mm systolic and/or 100 mm diastolic) as determined by readings made before or at any time after the attack was found to be 73 per cent More than half the cases showed hypertension during the first year The hypertensive group included 37 per cent of those aged under fifty, and 78–84 per cent of those in the next three decades of life at the time of the attack All except one of the 20 female patients were hypertensives

The average course of the blood pressure during ten years after coronary thrombosis (not including the first month following the attack) has been plotted. The systolic pressure showed a slight rise during this period while the diastolic showed a slight fall

Evidence is adduced to show that the average blood pressure for the series before the attack was probably about 170/100 Although on the average the prior levels were not regained during the ten year period, they were in a few cases actually exceeded

I am indebted to Dr John Parkinson physician to the cardiac department of the London Hospital for placing his case notes at my disposal, and for his helpful advice in the preparation of this paper

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ACUTE DIFFUSE NON-SUPPURATIVE ENCEPHALITIS

TWO CASES DESCRIBED

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After a long absence from active professional work a certain reluctance to venture upon ground that is becoming more and more unfamiliar will be readily understood, but as the only person fully acquainted with the details of the following remarkable case it is incumbent upon me to record it.

Case 1.—A boy, aged 10, was admitted to the Leeds General Infirmary on March 7th, 1912. His parents stated that he had suffered from influenza before Christmas and since then he had not looked well. Except for rheumatism in his hands and feet he had been quite normal till the week before admission. Then a weakness of his right hand caused difficulty in writing and awkwardness in fastening his collar. Occasionally the fingers became flexed into the palm and could only be extended forcibly. On March 7th at 11 A.M. he was playing football when a playmate struck him on the nose. He ran a few yards, then fell and became unconscious. He was seen by Dr. Rock, who made the following notes, which he sent with the patient to the infirmary: "11.30 A.M. unconscious; left eye firmly closed and pupil contracted to a pin point; right eye wide open and pupil fully dilated; upper right eyelid in a state of continuous convulsive movement; right arm the same. Face deep maroon colour; breathing regular, 10 per minute, stertorous; pulse-rate 60; no vomiting. Some frothy mucus was twice ejected, but this was attributed to some neat brandy irritating his larynx."

On admission he was still unconscious; both eyes were wide open and usually deviated to the right; pupils dilated and slightly sensitive to light. The face was congested, conjunctivæ suffused, and the left angle of the mouth was seen to twitch. Both arms were rigid and there was frequent twitching of the right arm and leg. Pulse of good volume, rate about 100; temperature subnormal. As he was being examined the breathing was noticed to become more and more irregular in rhythm and the stertor more pronounced. In a few more minutes it was evident the Cheyne-Stokes type of respiration was developing. Both optic discs were then found to be swollen and pale and their edges blurred.

Operation.—It was quite clear that the compression was increasing and that relief was urgently necessary, so he was at once taken to the theatre and decompression operations over the right and left motor areas were carried out. The gaps made in the cranial vault were roughly circular and 2½–3 in. in diameter. On the left side, which was first attacked, the dura bulged and there was no pulsation, but when the dura was slit crucially the soft brain bulged till it had risen quite an inch or more above the surrounding bony surface. The pia arachnoid was œdematous and the cerebro-spinal fluid that escaped was clear. On the right side the protrusion was not so pronounced, but the intracranial pressure had no doubt been partially relieved by the first decompression. From the moment of his fall to the conclusion of the operations only 4 hours elapsed.

Progress.—The next morning it was evident that the relief of tension had led to considerable improvement. Though he did not recognise either his father or his mother he was aware of the presence of others. Questions were answered in monosyllables. The respiratory rhythm was more natural. There was a definite right facial paresis, the left angle of the mouth being drawn to one side when he spoke. He made such movements as he was asked to do. There was no rigidity and the pulse-rate was 1[illegible]4. He had a number of fits on March 9th in which the right side of the face and both arms were affected and the legs rigidly extended, and on the 10th he had five more at hourly intervals. On that day the latent period, which had been very pronounced in putting out his tongue, became much shorter. Both legs could be moved fairly well and equally, but there was a very noticeable tremulousness when he raised his right arm, as if the flexors and extensors of his elbow and wrist did not efficiently counterbalance one another. The right grasp was very weak. When the wounds were dressed the brain protrusion beneath the left flap was large, but that on the right was hardly perceptible. On March 13th the patient was bright and intelligent, and there had been no fits since March 10th. He was able to give his own account of his fall and of some of his preliminary symptoms. He also described the peculiar closure of the fingers of his right hand, already mentioned. The two grasps were now nearly equal, the facial paresis could barely be noticed when he smiled, the latent period and the leg reflexes were normal, and the swelling of the optic discs was subsiding. When the dressings were discontinued there was a rounded translucent swelling as big as half a moderate-sized orange over each decompressed area. These slowly increased and obviously contained cerebro-spinal fluid (see Fig. 1, left).

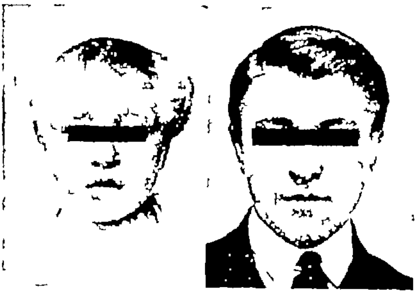

FIG. 1 (Case 1).—Left, in 191 , aged 10. Right, in 1919.

Further operations.—On May 14th, as the swellings tended to increase, an incision was made into the one on the left side. The brain still bulged through the gap in the bone ½–1 in. above the cranial surface. It was covered by a milky looking pia mater. The dura could not be distinguished, but the skin was lined on its deep surface by a distinct white membrane continuous at the margin of sac with the pia mater. The membrane was sufficiently thick for its edges at the incision to be sewn together before the skin was sutured. The tension of the right swelling was diminished by the operation, but only after paracentesis did the tumour disappear. Both swellings, however, soon re-formed and slowly increased.

On June 6th an incision was made behind the left ear and the sac opened. Its posterior wall was [illegible] and turned back upon itself and the [illegible] to the soft tissues beneath it. A piece of [illegible] foil was inserted into the sac and arranged [illegible] between the edges of the incision in the hope that it would prevent the opening from closing and allow the [illegible] fluid to drain into the tissues of the neck. The [illegible] was then closed.

Result.—From this date there was no further trouble and he was discharged on June [illegible] had healed. The translucent swellings gradually became smaller, but before they disappeared [illegible] as an out patient. They may have [illegible] months.

It was not till [illegible] not because of any [illegible] because he chanced [illegible] was then, to all appearances, a [illegible] young fellow. [illegible] either side [illegible] was a well-marked [illegible] plate lying over [illegible] the result of a number of bone chips which were placed under the flap before the original wound was closed The opening was by no means covered in 1919, but he has assured me that it is much smaller in 1936 and that the plate continues to grow It was in this year that I was able to get into communication with him He works at a clothing factory is married and has one child and does not remember feeling any ill effects from his accident during all the 21 years since the operation (Fig 1 right)

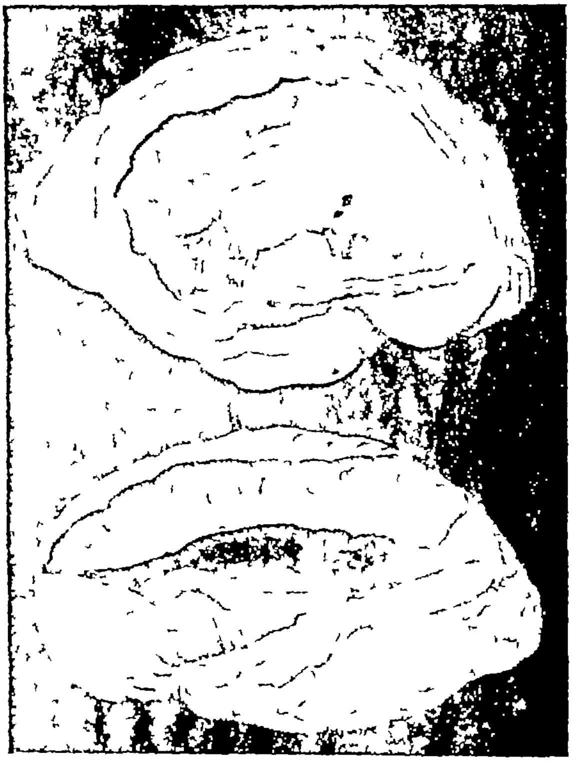

FIG 2 (Case 2) —Above the right cerebral hemisphere showing the lateral ventricle enormously dilated and the atrophic and fibrotic remains of the cerebral tissue Below the left lateral ventricle considerably dilated The pressure within it would be equal to that in the right ventricle The prolonged intraventricular pressure accounts for the degenerative changes in the left hemisphere described by Prof Jacob

(From drawings in *Brain* by R C Brown)

Comments—It was only after much thought that I came to the conclusion that the condition which had led to this remarkable combination of symptoms was almost certainly a diffuse non septic encephalitis involving at least one, or the greater part of one, of the cerebral hemispheres In making this diagnosis I was materially helped by the memory of another case which was fully recorded[1] in association with Dr R Cunyngham Brown It is unnecessary, and it would be tedious, to give a full account of that case, but some of its arresting features may be recalled, for they have a curious resemblance to those present in Case 1 and an important bearing upon their causation

CASE 2 —A boy aged 10 the son of healthy parents had had perfect health till 5 years before he was admitted into the Huddersfield Infirmary on Oct 3rd, 1891 under the care of my father His illness dated from a fall from a wall about 8 feet high and though apparently none the worse for the fall he was put to bed as a precaution The next morning he could not be roused and a doctor who was called in said he was suffering from "compression" He remained unconscious most of the day and then gradually recovered In a few days he was going about as usual A month later he had an epileptiform fit, and similar convulsive attacks occurred every other month for two years In the latter part of this period slight loss of power was noticed on his left side

He then had a second fall, this time from a height of only about 3 feet, and was taken up insensible For 2 weeks he lay unconscious and during that time he slowly emaciated, then he began to gain strength but was unable to get out of bed for 8 months Dr F L Mackenzie described him as having a purely vegetative existence at this stage For some time he lay in a state of "cerebral irritation," passing fæces and urine into the bed and becoming extremely emaciated Pulse rate 120, temperature 97 8° F, respirations regular Towards the end of this 8 months he began to improve, first moving about in bed and taking nourishment, but spastic paralysis of the left arm and leg slowly developed During this period the fits were in abeyance, but shortly after getting up he had one in which "he squinted and worked the left side" These attacks occurred 2 or 3 times a week and at first were controlled by treatment, but after 18 months treatment had no effect, and he would have 2 or 3 fits every day The loss of power increased, his behaviour became eccentric, and he was difficult to control For a fortnight before his death, which followed an exploratory operation he was under observation in the infirmary He had 3–4 epileptiform seizures every day, he was slow in answering questions, his enunciation was deliberate, and his behaviour abnormal, but his expression was intelligent

Histological report on corresponding portions of the right and left frontal lobes was as follows "Right considerably thinned, microscopically has lost all trace of nerve structure, showing no nerve-cells but merely condensed neuroglia infiltrated with inflammatory products Numerous inflammatory foci are present and the perivascular spaces are enlarged, pia mater shows marked inflammatory thickening Left the ordinary layers of the cortex can be recognised, but the nerve-cells show considerable degenerative changes and there is much dilatation of the perivascular spaces, there is no thickening of the pia mater" (Fig 2)

DISCUSSION

The features common to both cases are the remarkable attacks of compression and the atypical character of the symptoms The changes in the brain of Case 2 are sufficiently attested by the illustrations and by the microscopical report of Prof. E H Jacob of the Leeds University

The most remarkable point, however, is the fulminating type of the signs of compression in both patients immediately after injuries that seemed quite inadequate to account for them Though the question of initial concussion is not of very real moment in determining the conditions causing the compression, still the facts connected with its possibility may be considered

There is no record of any external injury in either patient and certainly none was present in Case 1 In that case, too, the diagnosis of compression was made within 30 min of the fall, so the concussion factor, if present at all, was speedily succeeded by signs of pressure But more impressive still was the triviality of the blow on the nose, and the way in which the lad fell on the ground This was quite inadequate to explain the rapid onset of such grave symptoms as to threaten death within 3 hours In Case 2 concussion, after the first fall, can be ruled out altogether or allowed to be only very slight, and yet the accident here was such that a severe injury might have occurred On the other hand, after his second fall it was quite possible that concussion might have deepened into compression, though as far as could be judged the injury was trivial, and quite nadequate to produce the severe cerebral mischief hat followed.

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[1] *Brain* 1893 p 213

It has already been indicated that the symptoms n these two cases are atypical Those who are amiliar with the grave results of head injuries met ith in hospital wards will recognise that in spite of ome superficial resemblance the clinical picture resented by both is very different from that of extra ural hæmorrhage. Moreover the compression that ollows on concussion resulting from brain laceration n a case of severe head injury or fractured base can arely be in doubt while the history and the signs f external injury cannot be overlooked Again he practitioner could hardly confuse the common orms of cerebral hæmorrhage with either case; hilst the clinical course of intracranial tumours omes into quite a different category

Yet the two cases have an impressive likeness to ne another After a period of 36 years during which had come into close contact with innumerable cases f grave head injury the memory of the details of the arlier case remained clearly cut in my memory so learly that at once I was able to recognise how losely Case 1 resembled it. The clinical course of llness in Case 2 was undoubtedly the expression f a diffuse inflammation of the whole right hemi phere and of the deformation of both resulting rom the inflammatory softening and from the increased pressure of the cerebro-spinal fluid and the added inflammatory exudation above the iter It was not open to question that the encephalitis was acute, and not of septic origin and it was because of the certainty of the diagnosis in Case 2 that I ventured to make a similar diagnosis in Case 1

But the cause of the encephalitis is problematical. In Case 1 there is a definite possibility of infection for there is the story of the influenza followed by a series of prodromal symptoms till the sudden flare-up of the cerebral mischief was precipitated by an apparently trivial injury There can be no real doubt that the brain trouble arose from an infection and I regret that, though at the time I did not suspect it in the preoccupation of the moment I took no steps to ascertain its possibility In Case 2 the possibility of infection was never thought of. Bacteriology was then in its infancy and influenza had attained neither the virulence nor the fashion of modern times. Therefore, though the lad was stated to have had perfect health before his first fall it is quite likely that his friends, when they gave his *history dating back for 5 years* overlooked or did not realise that some childish ailment might have determined the gravity of the illness

I am much indebted to Mr P R. Allison surgical tutor to the Leeds General Infirmary for his kind help

Newton Abbot Devon

AN OMNIBUS SERVICE FOR A HOSPITAL.—Four doctors a hundred nurses, and nearly a thousand patients are petitioning the London Transport Board to provide an omnibus service to Hillingdon County Hospital At present out patients have to walk at least a mile each way

BIRMINGHAM AND MIDLAND EYE HOSPITAL.—A beautiful house Burcot Grange Blackwell on the slopes of the Lickey Hills, has been presented to this hospital, and on March 12th it was opened by the Lord Mayor as the new annexe It will be staffed by a matron a sister and five nurses. Accommodation is provided for 1? women and 20 children

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HYPOGLYCÆMIC SHOCK IN THE TREATMENT OF SCHIZOPHRENIA

INTERIM REPORT ON CASES TREATED AT ST BERNARD'S (FORMERLY HANWELL) HOSPITAL FOR MENTAL AND NERVOUS DISEASES

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AFTER the publication of Dr Isobel Wilson's[1] admirable study of the hypoglycæmic shock treatment in schizophrenia evolved by Dr M. Sakel of Vienna, I began to use this method at St Bernard's Hospital The method reported by Dr Wilson was closely followed so only a brief account will be given here Insulin is given intra muscularly to the fasting patient at 7 30 A.M. Dosage increases daily until the dose producing coma is reached in theory this is repeated daily throughout treatment but to obtain the desired 2–2¼ hours of coma daily, variations are needed Ordinarily coma is terminated by giving 10 oz of a glucose solution containing 7 oz of glucose by means of a nasal tube. Dangerous conditions calling for immediate termination of coma may arise epileptiform convulsions and laryngeal spasm both giving rise to cyanosis and collapse, are the most serious These alarming states are rapidly remedied by injection of 1 c cm. of adrenaline and further danger is averted by giving glucose intravenously or by nasal tube Return of the symptoms of hypo glycæmia may occur some hours after the usual termination (after-shock) this is treated as above, by adrenaline and glucose

The physical effects of large doses of insulin include shivering, pallor, nausea sweating salivation, myo clonus spasms of muscles convulsions and coma Here the pulse-rate has usually risen as shock con tinued, bradycardia being rarely seen (agreeing with reports from Munsingen and disagreeing with those from Vienna) The blood pressure has varied inconstantly seeming to depend on the restlessness or otherwise during coma The blood-sugar has shown a lowest value about three hours after injection not apparently related to the depth of coma.

Psychological effects are quietness lethargy sleep and coma. In the quiet period there may be lucidity After coma there may be a quiet, lucid period which when recovery is proceeding extends more and more into the conscious life of the patient Some patients wake very noisily with restlessness; the differing reactions resemble those of ordinary people waking after an anæsthetic. Affective response is improved early and the friendly spirit among patients undergoing treatment is remarkable.

Reactivation of the psychosis during the lighter stages of hypoglycæmia really does seem to occur (Dr Wilson disagrees) unexpected material from earlier stages of the psychosis is brought to light often seeming incoherent and futile until checked with the relatives

Cases were taken rather haphazard with a view to testing the treatment the old feeble and hopelessly demented were avoided

CASE REPORTS

CASE 1—Female aged 29 Nervous breakdown 11 years ago delusions of persecution 5 years, mental hospital 2 years Before treatment she was inter fering complaining pestering ; delusions of poisoning and *interference at night* related with winsome smiles Treatment commenced Oct 26th 1936 with 20 units of insulin Some insight shown on third day—"I must have been mistaken about those injections (of gas on into the gums at night) perhaps it was that the gums were sore" *Severe spasms and tongue biting* throughout treatment On the twelfth day had an epileptiform fit 3½ hours after 100 units of insulin Delusions soon became less apparent and her frequent complaining letters ceased Menstruated for the first time in 4 months *Treatment was stopped on the 71st* day on account of an influenza cold She was not satisfactorily comatose below 240 units of insulin and 290 units was the highest dose

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[1] Wilson I G H (1936) Study of the Hypoglycæmic Shock

Result—Mental state is improved she feels that her delusions are being absorbed and she can laugh at them now Works in the ward is more serious in manner and affect is more congruous

CASE 2—Female aged 31 Similar attack 7 years ago Admitted 1½ years ago after a month of psychosis Had improved a little before treatment but was still impulsive, *verbigerant* staring vacantly and at times tearful for no good reason Treatment began Oct 26th, 1936 with 20 units insulin By the 5th day she was generally rational On the 10th day woke up and said "Everything has changed I seem to have come round" Afterwards she showed psychosis only during hypoglycæmia Dosage reduced from the 19th day and treatment ended on the 24th day she showed no psychosis for the last three days Coma dose of insulin was 80 units

Result—Mental state seems normal and she has been discharged over three months

CASE 3—Female aged 21 Admitted March 3rd, 1936, soon after onset Before treatment was in refractory ward resistive impulsive, usually *mute often stuporose* Treatment started Nov 9th 1936 Talked reasonably after hypoglycæmia on the first day Was soon garrulous and showed many bizarre delusions "I used to be a dead soul now I am alive and can breathe and laugh and feel my heart beating" On the 5th day four hours after 80 units of insulin had difficulty in breathing which passed off after insertion of nasal tube She did not respond to the usual glucose feed and became cyanosed, with pulse 146 and opisthotonos Intravenous glucose, *adrenaline and Coramine were given* she became restless, turning somersaults after more glucose at 3 15 P.M she settled down and gave no further anxiety Coma dose was 80 units of insulin and a maximum of 110 units was given treatment ending on the 39th day

Result—Mental state much improved and has further improved in the last months, she stayed in hospital on account of adverse home circumstances She still has unusual religious ideas—she was brought up in a convent—but works hard is pleasant and was discharged "on trial" on March 1st, 1937

CASE 4—Female aged 23 Admitted three years ago after a year of psychosis Before treatment was in a single room in refractory ward impulsive resistive babbling loudly and incoherently Incontinent and hand fed showing little affect of any kind Treatment began Nov 12th, 1936 with 40 units of insulin By the 7th day she was giving rational answers amenable and feeding herself On the 9th day *after coma following 80 units of* insulin she did not awake in spite of emergency measures was drowsy all day and had after shock at 11 P.M Further adrenaline and intravenous glucose improved her general condition but she was drowsy *for the next two days*, having glucose feeds by nasal tube Treatment recommenced on the 12th day when similar events followed a dose of 70 units Her pulse rate was about 120 all day and in the evening her temperature rose to 104 2° F Gradual improvement in the next two days was followed by the appearance of a rash which looked like chicken pox—though there was no source found for the infection and no other cases developed—on the 15th day Six days fastigium was followed by recovery in three weeks She became pleasant, talked easily and rationally was no longer incontinent and was able to go home for Christmas On Dec 29th treatment was resumed (using another brand of insulin) She became worse and from the 6th to the 22nd day was as she had been before treatment Since then she has improved and has provided no more alarming incidents Treatment discontinued after 51 days, she then relapsed after a week and further treatment again brought improvement Treatment is still continuing

Result—Mental state is improved, she can maintain a rational conversation though a little retarded, is docile, clean in habits, shows appropriate affective response

Comment—This case is of interest since she has had previous intensive treatment by Somnifaine, in three courses the longest lasting 19 days in April June, and September, 1935 She showed much less improvement with this treatment, persisting in her incontinent habits This is mentioned because there is still some question whether the improvement seen in the hypoglycæmic shock treatment is due to the extra attention given to the patients, results after insulin on the same case having been so much better (though her relapse after somnifaine had been into rather a worse state than before) and extra attention during the two methods of treatment being roughly the same, it seems that the extra attention is *not wholly responsible for the improvement* under insulin treatment

CASE 5—Female aged 41 First attack 11 years ago, admitted here three years ago Before treatment mute, almost inaccessible, violent, smashing glass and attacking other patients, refractory ward Treatment began Dec 3rd, 1936, with 30 units of insulin She talked from the start and rationally after a week though resistive and noisy in light hypoglycæmia Pulse of fibrillation during light hypoglycæmia which often settled to a regular rhythm as coma deepened After 30 days was able to go out for the day with her sister Subsequently the psychosis showed more plainly early delusions recurring and violence being frequent She became emaciated and treatment was ended on the 53rd day

Result—She has since settled down and is putting on weight, *she is accessible gives reasonable replies*, is quiet She is retarded, says that she "does not understand", delusions are now seldom evident in her talk

CASE 6—Female aged 25 Admitted July 18th, 1936, after a short mental illness Before treatment restless, resistive, manneristic, grimacing, seldom speaking Treatment began Dec 29th with 30 units of insulin On the 2nd day she had a fit with tonic and clonic phases and slight cyanosis, but no other likeness to epilepsy, this lasted for 5 mins As this was only 50 mins after injection and she was in good condition hypoglycæmia was not *interrupted* She did *not* sleep at all and at 11 30 A.M complained rationally of a severe headache, after drinking glucose was again mute By the 7th day was talking well, showing a delusion that her husband was dead, this delusion had gone by the 9th day She then began to have *hysterical symptoms, small "fits" of shivering* in which she would curl up and roll gently to the floor Insulin was omitted for one day and the fits ceased after 10 grains of Medinal After gradual decrease of insulin dosage treatment was stopped on the 18th day On the 20th day *she went out with her husband and her parents*, on the 23rd day she talked reasonably about her illness and, without prompting discussed marital difficulties (dyspareunia) During the night she relapsed, though next day had still insight and was distressed to feel herself again going into psychosis She became *noisy* hallucinated deluded, violent obscene and manneristic Further treatment brought back her lucidity 30 days after relapse was well behaved and rational Discharged "on trial" a week later (March 1st) and is still well and happy at home 48 days' treatment

Result—Full remission

CASE 7—Female aged 26 Admitted April 7th 1933, certified two years before *Before treatment resistive*, mute stuporose faulty in habits, hand fed A blood pressure of 80/64 mm Hg had rendered somnifaine narcosis abortive in 1935 Treatment commenced Dec 17th 1936 with 30 units of insulin On the 2nd day smiled reasonably, talked for the first time *in three years* but would not converse Blood pressure rose during hypoglycæmia to 100/75 mm Hg falling after termination this was inconstant On the 7th day had aftershock at 12 55 A.M easily remedied On the 8th day, after 110 units of insulin she did not wake as usual and was sleepy all day treatment was omitted for two days and glucose feeds given After 16 days of treatment she was in poor general health and treatment was discontinued A week later she developed a mild form of erysipelas her mental state was unchanged but recently she has shown more interest and now maintains a conversation attends occupational therapy classes is pleasant There is almost full remission but this may be due to the intercurrent erysipelas.

CASE 8 —Female aged 27 Admitted April 26th 1934 after six months psychosis Before treatment fatuous overactive mischievous manneristic, interfering destructive Treatment commenced Dec 30th 1936 On the 5th day she was giving sensible replies quieter She improved steadily until the 19th day when treatment was stopped for a week on account of bronchitis at the end of this week she was as fatuous as before After further treatment since Feb 2nd 1937 she shows a little improvement Affect is congruous she sits quietly instead of wandering about is more accessible and helps in the ward Lately during light hypoglycæmia she has shown a noisy phase of her psychosis. She had 69 days of treatment

SUMMARY

A report is given of 8 schizophrenics 5 having a longer psychosis than 1½ years treated by hypoglycæmic shock. All showed some improvement 2 with full remission 3 being much improved and 3 a little improved There were 416 periods of hypoglycæmia in all with only three seriously alarming incidents and 2 cases of "after-shock there were no lasting untoward physical results In general, the findings of the continental investigators (as reported by Dr Wilson) are confirmed the results being less impressive, probably on account of the more chronic cases treated.

I am indebted to Dr J B S Lewis medical superintendent of Hanwell Mental Hospital for permission to publish this report and for his advice in determining the diagnosis of cases for treatment

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SCIATIC SCOLIOSIS

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SCIATIC scoliosis is a well known clinical entity which has not yet been placed on a satisfactory pathological basis We are all familiar with the gross variety of the syndrome, the patient with pain down one leg his whole trunk deviated to one side and the bent knee, but in the course of these observations attention will be drawn to another class of case which at present is I think, often labelled sciatica and left at that Even granted that sciatica is generally recognised now as a symptom and not as a pathological condition in itself the word is still too loosely applied. In fact, while collecting and observing this series of cases two things have impressed themselves. First the dramatic relief of pain obtained in some instances merely by placing the patient in the position of head suspension; secondly that the differential diagnosis of so called sciatica is a most important one and that more care is necessary in defining the condition referred to when the term is used

CLINICAL FINDINGS

A series of 26 cases is presented and, as the Table shows they have been divided into two broad types those with sciatic pain and an obvious scoliosis and those with sciatic pain in whom a slight degree of lateral deviation of the spine became apparent during examination The series was divided as follows:—

Total cases	26	Aged 25 or over	22
Male	16	Contralateral in Type I (per cent)	62
Female	10	Contralateral in Type II (per cent)	60

Type I cases—It will be seen that 16 cases fall into the first class, and I think this is the variety of case which has most often been described hitherto These patients always stand with the knee of the painful leg bent and the spinal deformity is obvious but it is a ' list rather than a true scoliosis Of this group 10 had a contralateral deformity that is to say the list of the spine was to the opposite side compared with the pain in the leg and 6 had deformity and pain on the same side.

The sciatic pain itself is of great interest because some patients have pain only a sciatic neuralgia, whereas many of them have a true sciatic neuritis which has been shown in this series by disturbed knee- and ankle-jerks in combination with one or more of the following signs stated in their order of relative frequency tenderness over the course of the nerve paræsthesiæ in the leg and foot and wasting of muscles Pitkin and Pheasant (1936) say that objective manifestations do not occur but their statement is not true of my cases Another unusual point about the pain is that it is referred to the course of the nerve and not to the area of distribution.

TYPE I CASES WITH OBVIOUS DEFORMITY

Case.	Age and sex.		Site of first pain noticed.	Onset of sciatic pain.	Deformity
1	M	30	Back	Rt few wks. later	Homolateral.
	M	30	Rt. leg	—	Contralateral
3	M	26		—	
4	F	15	Lt leg	—	
5	M	60	Back.	Rt few wks. later	
6	F	30		Lt., 2 wks. later	Homolateral
7	M	22	Rt leg	—	Contralateral
8	M	62		—	Homolateral
9	M	32	Back.	Lt 6 wks. later	Contralateral.
10	M	37		Lt., 9 mths. later	
11	M	38	Buttocks.	Rt mths later	Homolateral
12	M	29	Back.	Lt 2 yrs. later	"
13	M	39	Rt. buttock	—	
14	M	47	Back.	Lt 1 yr later	Contralateral.
15	F	22		Lt. wks later	
16	F	23		Rt., mths. later	

TYPE II CASES WITHOUT OBVIOUS DEFORMITY

Case.	Age and sex.		Site of first pain noticed.	Onset of sciatic pain.	Deformity
1	F	37	Rt. leg	—	Contralateral
2	M	32	Back.	Rt. 1½ yrs later	Homolateral.
3	M	40		Rt 10 wks. later	Contralateral
4	F	30	Lt. leg	—	Homolateral
5	F	25	Back.	Rt. 1 yr later	Contralateral.
6	F	23		Lt. few wks later	Homolateral
7	F	41		Lt some mths. later	Contralateral
8	M	37		Lt. 1½ yrs later	
9	M	55	"	Rt., 3 yrs. later	"
10	F	26		Lt. and rt., mths. later	Homolateral at present.

No patient has had complete limitation of movement of the lumbar spine The ranges most often curtailed have been found to be forward flexion and rotation to one side generally towards the side free from pain sometimes unilateral limitation of side bending has been associated with limitation of rotation and the limitation occurs in those directions which would stretch the painful sciatic nerve It has been common to find three out of the possible six directions of movement free This is in opposition to Putti's (1927) explanation that sciatic scoliosis is due to an arthritis of the small joints of the lumbar column such an arthritis should surely produce limitation of movement in all directions Muscle spasm is noticeable as a rule, but is on one side only

Type II cases—Out of the 26 in the series 10 patients have been placed in a separate class on account of certain well marked differences in their clinical aspect First of all sciatic pain was the outstanding feature, and they did not complain of deformity, as Type I cases do Although not noticeably scoliotic, nevertheless they were found to have slight lateral deviation in the lower part of the lumbar spine Radiograms showed a congenital malformation—e g sacralisation, spina bifida occulta, &c —to be present While quite satisfied that they could legitimately be included on clinical grounds, I became still more impressed by the fact that they were cured by the same treatment as the Type I cases with gross deformity These patients do not stand with the knee of the painful leg bent, and their deformity is slight enough to escape notice Their range of movements is limited in the same manner as the Type I cases and their pain is more often a neuralgia than a true neuritis

TREATMENT

Many methods of dealing with this most painful and intractable condition have been advocated They include rest, diathermy, massage and physiotherapy generally, injection of the painful sciatic nerve with novocain simple fixation in a plaster bed or cast manipulation of the spine under a general anæsthetic, and the application of a plaster jacket with the patient in the position of head suspension The last mentioned method is the only one, in my experience in which a relapse has not followed the apparent cure of the patient It is notable that it produces equally good results with patients of either type

A plaster jacket is applied with the patient in head suspension by means of a halter which grips the patient s chin and occiput and is attached to a block and tackle The patient is lifted until he signals that his pain has disappeared or alternatively, to the position where it is least Many patients obtained immediate and dramatic relief of the pain in this position but it has been noticeable that this does not occur in all cases in some the pain takes two or three days to disappear In patients with paræsthesiæ these disappear more slowly than the pain Even under full suspension some of the cases with very pronounced scoliosis did not straighten out completely but they have all been able to stand with straight legs whereas previously they had been forced to stand with one knee bent When incomplete correction occurs it is advisable to reapply a fresh plaster jacket by the same method after two or three weeks The jacket must be complete from the axilla to the trochanters and as soon as it has become hard the patient is lowered so that he is standing normally The necessary parts are cut out to allow walking sitting and moving the arms The plaster is applied over a stockinet vest with all the bony points well padded with felt

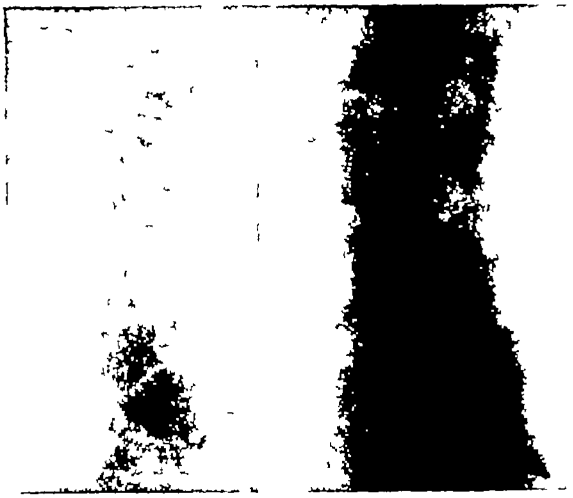
As a rule the jacket has been kept on for about eight weeks by the end of which period all the patients in this series have pronounced themselves free from pain The jacket is then split with the patient in head suspension again and a cast is rapidly made from the jacket after removal Before the patient stands again, the original plaster is reapplied and fixed with stropping and from the cast a lighter Pexaloid jacket is made of the same dimensions as the plaster When the pexaloid is finished and hard it is substituted for the plaster, and the patient continues to wear it for at least six months and sometimes longer

PROGNOSIS

All the cases considered obtained relief by this procedure—a large number of them immediately the head suspension was put into action, and the remainder within two or three days In all but three of the cases relief has been permanent up to the present, and these three cases are interesting enough to warrant a few detailed remarks

CASE 3 (Type I) —This patient was a very tall and heavy man he stood over 6 ft The deformity corrected almost completely in the first plaster, and the pain was relieved He took the plaster off because he did not like it, and the pain came back Another plaster was put on with the same effect, but when the pexaloid jacket was being made he left the plaster off again, and his pain came back The case was not proceeded with

CASE 2 (Type II) —This patient was quite a small man, but the history of his pain extended over more than two years His pain diminished very slowly Although he is going about his ordinary work now he states that his back aches occasionally



Left normal lumbosacral joint disc Right a narrow disc

CASE 5 (Type II) —This lady, after obtaining complete relief from a suspension jacket, had her pain recur after an interval of six months although the pexaloid jacket was worn continuously and she was very particular about carrying out all instructions After some consideration the lumbosacral region of the spine was grafted by the usual method four years ago, the graft extending from the third lumbar spine to the second sacral This patient reported as perfectly well in June, 1935, two years after the operation saying that she was quite recovered and that she was going abroad

In general, in those cases where head suspension produces dramatic relief of the pain, cure is certain, provided that fixation is continued long enough Where a *true* sciatic neuritis exists paræsthesiæ, in particular, often linger after pain has gone and clear up very slowly, and a more guarded prognosis must be given The benefit produced by treatment also depends upon the length of time for which symptoms have previously existed, where there is a long history relapse will occur easily with the slightest remission of fixation (for instance, shrinkage of the patient in the plaster jacket) during the first few weeks

RADIOGRAPHIC APPEARANCES

Williams and Yglesias (1933) suggested narrowing of the intervertebral disc at the lumbosacral joint as a cause of sciatic pain An examination of lateral X ray pictures of this series of cases suggested that this condition might be present in a large proportion

It is difficult to be accurate about the lumbosacral joint but it seemed worth while to examine the radiographs of the lumbar spine of as many apparently normal persons as possible By the courtesy of Dr P H Whitaker a hundred films taken for all sorts of purposes, were examined, and two things were noticeable first of all that narrowing of this joint space was a definite entity; and secondly that such narrowing never occurred in the first two decades of life

The Figure indicates the appearances which are referred to as a normal and a narrow lumbosacral joint disc. It is interesting to compare the ages of the patients there is only one patient out of the series whose age was less than 20 and the majority of the remainder were 30 or more

PATHOLOGY

It has been indicated earlier that the clinical findings in these patients oppose the theory that sciatic scoliosis is due to an arthritis of the lumbar intervertebral joints mainly on the grounds that a true arthritis should produce complete limitation of movement it is unlikely that the symptoms would always be unilateral if arthritis were present and that if such arthritic œdema were causing pain by compression of nerve-roots then it is extraordinary that the fourth and fifth lumbar roots appear to be the only ones ever affected There is further the occasional case of alternating scoliosis to be accounted for (Capener 1933) No true alternating cases were met with in this series, but there was one patient whose history suggested that his deformity had changed.

Much work has been done in recent years on the constitution and functions of the intervertebral disc and is associated with the name of Schmorl (1927); it is known that discs higher up the column atrophy and even herniate into vertebral bodies Taken in conjunction with the radiographic findings it seems possible that narrowing could easily occur at the lumbosacral junction The direction of the deformity may mean something in elucidating the cause of this condition for there are two possible explanations of the muscle spasm and deformity Irritation of the affected nerve-roots by pressure could produce muscle spasm reflexly on the same side of the body as the pain and in the second place an involuntary effort on the part of the patient to relieve pressure by opening up the neural foramen on the affected side would produce contraction of the muscles on the opposite side of the body to the pain—a contralateral deformity

SUMMARY

1 Cases of sciatic scoliosis have been divided into two types—those with and those without obvious deformity

2 Fixation in a head suspension plaster has produced relief of symptoms in 26 cases

3 It is suggested that the underlying cause of this condition is abnormal shrinkage of the intervertebral disc between the fifth lumbar and the first sacral segments of the spinal column.

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THE EARLY BACTERIOLOGICAL DIAGNOSIS OF DIPHTHERIA

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In 1934 Soló described a "rapid culture method" for use in cases of suspected diphtheria Swabs were impregnated with serum and heated over a naked flame to produce surface coagulation of the serum They were used for swabbing throats in the usual way and incubated for two to four hours, a smear being then made from the incubated swab Soló claimed 80 per cent. of positive results in cases of diphtheria after two hours of incubation and a still higher percentage after four hours.

Brahdy Brody, Gaffney Lenarsky and Smith (1934) confirm this and state that they were able to give accurate reports in 95 per cent. of clinical cases of diphtheria within four hours using this treated swab, as compared with only 83 per cent accuracy in eighteen hours by the usual Löffler slope method and later (1935) they say that the technique is simple and the method quicker and more accurate than that using Löffler's serum medium. Parish (1935) in a letter and later (1936) confirms this, and states that the speed and reliability of diagnosis in diphtheria can be improved by the use of serum treated swabs

There is a general consensus of opinion that the direct smear is of little value in the diagnosis of diphtheria. Topley and Wilson (1936) state that as a method of confirming or refuting a clinical diagnosis of diphtheria this procedure has little to recommend it Gray and Stone (1936) examined 1000 swabs sent to their laboratory 202 were positive on culture 33 were positive on direct smear and of these 4 were negative on culture 2 of them showing no clinical evidence of infection They consider that these findings emphasise the need for caution in the interpretation of positive results in direct films but conclude that primary examination of direct films is useful in aiding the clinician in doubtful cases

We decided to compare the results given by the serum treated swab with those given by the ordinary direct smear and by culture on Löffler's medium

TECHNIQUE

Swabs taken by one of us from cases in Ladywell Isolation Hospital were examined independently by the other at the Salford City Laboratory on the same day No clinical information was supplied with the swabs sent to the laboratory

Serum treated swabs were prepared as follows —

Ordinary throat swabs were soaked in filtered ox serum and heated in the hot-air oven at 80° C for fifteen minutes This method as recommended by Parish (1935) was found more satisfactory than heating the swabs over the naked flame Direct smears from these and from ordinary swabs were prepared by moistening the swab with one or two drops of water and tapping it firmly on a slide The slide was left to dry at a slight angle so that a portion of the resulting film was fairly thick, thus facilitating the search for organisms when they were not numerous Cultures on Löffler slopes were incubated for 18 hours before examination All smears were stained by Pugh's method this being the stain used for routine work in the City Laboratory

RESULTS

Throat swabs were taken from 428 cases, which were classified as typical diphtheria clean throats, and doubtful cases (see Table)

Group A—In 228 cases three swabs of each throat were taken one serum treated which was incubated for four hours at 37° C before making a smear from it and two plain swabs, one of which was used to make a direct smear and the other was cultured on a Löffler slope

Group B—In 100 cases two swabs of each throat were taken one serum treated (further manipulation as in the first group) and one plain swab from which a direct smear was made after inoculating a Löffler slope

Group C—In a third group of 100 cases three swabs were again taken from each throat, but the serum treated swab and one plain swab were both incubated at 37° C for four hours before making smears and with the other plain swab a Löffler slope was inoculated

In every case the serum treated swab was taken first

Results from Different Methods

	Total No of cases	Positives—		
		Serum treated swab	Direct smear	Löffler
Group A—				
Typical throats	118	91	81	114
Clean	91	20	11	61
Doubtful	19	3	3	8
Group B—				
Typical	63	48	43	63
Clean	29	10	6	22
Doubtful	8	0	0	2
Group C—				
Typical	83	65	64	79
Clean	17	3	2	15

From the Table it will be seen that, considering only swabs from typical diphtheritic lesions, the serum treated swab was positive in 204 cases out of 264 that is 77 per cent The direct smear was positive in 69 per cent (of 118 cases) when a separate plain swab was used for this purpose, and in 68 per cent (of 63 cases) when the same swab was also used to inoculate the Löffler slope When the plain swab also was incubated for four hours, the direct smear was then positive in 77 per cent (of 83 cases), as high a percentage as that given by the serum treated swab Although the numbers are small they suggest that the improved results given by the serum treated swab are mainly due to the incubation that it received

Our percentage of positive results with the serum treated swab are lower than those obtained by the American workers quoted, and by Parish (77 per cent as against 95 per cent) This is probably due to the atypical appearance of the diphtheria bacilli in the smears from these swabs as many of the bacilli had lost their metachromatism and appeared as uniformly stained rods which could not with confidence be distinguished from diphtheroids Unless some of the commoner pleomorphic forms such as barred, club shaped, irregularly staining, or granular bacilli were also present, smears were reported as negative Due regard was also given to the arrangement of the bacilli in the smears "Chinese letter" formation being regarded as evidence in favour of the organisms being true diphtheria bacilli

The diphtheria bacilli on the whole were much more typical in the simple direct smear from the untreated swab and in cases of clinical diphtheria were usually found without any laborious search Here again smears were not considered positive unless fairly typical diphtheria bacilli were present in moderate numbers

The results obtained by culture on Löffler s medium are superior to those given by smears from the serum treated and ordinary swab In 264 cases of clinical diphtheria, 97 per cent were positive on Löffler, 77 per cent on the serum treated swab, and 71 per cent by the direct smear Our percentage of positive cultures on Löffler is higher than obtained by the workers quoted We think this may be due to careful preparation of the medium and storage so as to avoid drying In a previous preliminary note only 87 per cent of 82 cases of clinical diphtheria were reported positive on culture Since then overhauling of the preparation and storage of the medium on orthodox lines have resulted, we believe, in the better results now published

In clean throats—previously typical cases—98 of 137 (72 per cent) were positive on Löffler, and 33 of 137 (24 per cent) were positive with the serum treated swab These results show that culture on Löffler is much more satisfactory than the serum treated swab for the detection of carriers, or in examination of cases for discharge from hospital.

The numbers of clinically doubtful throats swabbed is small In 2 of 27, positive results were recorded by the serum treated swab and direct smear, where culture on Löffler was negative Of these two cases one patient had diphtheria previously and was Schick negative, and antiseptics had been applied to the fauces prior to swabbing, while the other was suffering from scarlet fever with powdery deposit on the tonsils, and four subsequent cultures were negative This suggests a high percentage of false positives in doubtful cases, which we think is misleading in view of what follows

All throat swabs sent from cases of suspected diphtheria by practitioners to the City Laboratory during laboratory hours are examined by direct smear after a culture has been made on a Löffler slope An analysis of the last 3000 throat swabs shows only 8 positive on direct smear which were not positive on culture In the same series, 302 swabs were positive on culture and the cases admitted to Ladywell, direct smears gave positive results in 40 per cent of these swabs This is a much lower percentage of direct smear positive than that obtained in our series of cases of typical diphtheria, and can probably be explained by three factors

(1) Special care was taken in swabbing the throats for this investigation It is often difficult to obtain a good swab from a refractory child, but it is much easier with hospital facilities which are not available to the general practitioner

(2) Of the cases reported positive on Löffler and admitted to Ladywell 25 per cent were not true clinical diphtheria

(3) Swabs from cases in the hospital were taken on an average a day or so later in the course of the disease than those taken from cases outside This may have resulted in a higher proportion of direct smear positives

It is interesting to note that in this same series of swabs sent from outside to the City Laboratory, 52 per cent of the cases admitted with clinical diphtheria were positive by direct smear as well as on Löffler, and no case positive on Löffler which was not clinically diphtheria was positive by direct smear

CONCLUSIONS

We do not recommend the serum treated swab as a routine method for the diagnosis of diphtheria Apart from the difficulties of distributing freshly made swabs to the general practitioner and dealing with them on return to the laboratory the results given by them show only slight superiority over those given by the simple direct smear

All swabs sent from suspected cases of diphtheria should be examined by direct smear after inoculating a Löffler slope or other suitable medium. We believe that about half of the swabs sent for examination from cases of diphtheria will be positive in direct smears made in this way

We wish to thank Dr Edge medical superintendent of the Ladywell Sanatorium and Isolation Hospital for permission to investigate the cases

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Clinical and Laboratory Notes

CEPHALIC TETANUS

A CASE TREATED WITH INTRAMUSCULAR MAGNESIUM SULPHATE

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This case seems to be worthy of record first because cephalic tetanus is a rare form of the disease and secondly because much interest has recently been roused by newly devised methods of treatment for tetanus. The case is also of interest because it shows how confusing the physical signs can be during the onset of the disease when progressive involvement of the cranial nerve nuclei is slowly occurring

CASE REPORT

The patient was an island boy aged 17 On Oct 5th while at work he had slipped on a rock and fallen head first down a small waterfall He landed on the left side of his head, but did not lose consciousness He was picked up by his fellow workers and brought to me at once

On examination two clean cut wounds 1¼ in. and ½ in long were found on the scalp over the left pterion and parietal eminence respectively Probing revealed no evidence of fracture of the skull and there had been no bleeding from mouth nose or ears The tympana and fundi were normal There was no evidence of lung or other injury The scalp surrounding the wounds was shaved, the wounds were cleaned with hot 1 in 1000 perchloride solution and 5 silk worm gut stitches were inserted.

Next day the wounds looked clean and he complained merely of aching in the left shoulder due to bruising The wounds were redressed

On Oct 9th the edges of the wound over the parietal eminence were puffy stitches were removed and a small amount of pus expressed smears showed staphylococci only As he stated that he had bled from the right nostril on the preceding afternoon he was admitted to hospital and the wounds were dressed thrice daily with eusol A fracture of the cribriform plate was feared and a temperature of 101 6 F on the night of admission lent colour to this since the condition of the wounds did not account for the degree of fever but on examination the nervous system was normal The boy continued to show a nocturnal rise of temperature to 100 F and on the morning of Oct 11th his left upper lid was drooping and he complained that he could not keep the eye open The pupils were central and equal reacting sluggishly to light; direct and consensual reactions were obtained No head retraction and no neck rigidity tendency to a positive Kernig on both sides, more on the left than on the right No other signs in the nervous or other systems Temperature normal pulse rate 84 He was perfectly rational and complained of nothing but the inability to open the left eye His condition did not appear to be that of incipient meningitis Cerebro spinal fluid clear and colourless; no increased globulin

During the next three days the nocturnal fever abated and his condition seemed to improve slightly The only new symptoms were attacks in which 'everything went black,' a transient amblyopia lasted 5–10 mins Unfortunately I never saw him in one of them He had in all five such attacks His fundi were still normal

Oct 15th The right upper lid drooped; the left eye could now open; left half of the face weak On looking to the right the left eye did not cross the midline No diplopia, and all his reflexes were normal and symmetrical plantar response flexor

Oct 17th He had a peculiar skew deviation of the eyes The right eye whose orbicularis palpebrarum was in spasm, was directed downwards and outwards when the lid was raised, and the left eye upwards and outwards The left eye had a full range of movement but the right did not cross the mid line on deviation to the left The fundi were normal. He now complained of stiffness in the left side of the face which was still weak. The left masseter was rigid on palpation. The right was normal. Tetanus was diagnosed and 150 000 units of anti tetanus serum were immediately given intravenously Six hours after the injection the boy showed well marked opisthotonus and trismus, and his speech had become typically tetanic. He had had two generalised spasms since noon He lay with the arms flexed at the elbows, but in neither arms nor legs was there much rigidity at this stage

Oct 18th: Opisthotonus more pronounced though the trismus and speech were better Downward deviation of the right eye disappeared The right eye now simply deviated out from the midline The right orbicularis was still in spasm and the left was partially paralysed He thus lay with the right eye firmly closed the left half open. He was not sweating perceptibly but was much troubled by salivation so excessive that he used a handkerchief continuously and it had to be controlled with atropine The pulse rate was 86 but the temperature was normal.

It was decided to try the effect of intravenous Evipan Sodium and gr 5 dissolved in 10 c.cm of distilled water were slowly injected into the right basilic vein When only 5 c cm of the solution had been injected he had a violent generalised spasm followed quickly by six others during which he became cyanosed Presumably this was because evipan exercises an almost immediate depressant influence on respiration and this, added to the fixation of the thorax, increased the tendency to convulsion He was still swallowing fairly well and was ordered chloral gr 20 sodium bromide gr 30 every two hours. Avertin not being available treatment with intramuscular magnesium sulphate was begun the same evening 10 c cm of a sterile 10 *per cent* solution were injected into the right vastus externus His rigidity gradually lessened and within 45 minutes of the injection it had become impossible to pass a hand under the back. Breathing became a little shallower and slightly irregular but his pulse remained good An hour later he had a generalised spasm, caused by turning a blanket back and 1¼ hours after the injection he began to have mild spasms again Since the doses had definitely produced some relaxation and procured him 1¼ hours of practically unbroken sleep it was decided to continue the injections 4 times a day These were given on Oct 18th–30th and altogether he had 86·65 grammes of magnesium sulphate Chloral and bromide were also given two hourly gr 40 and gr 60 increasing to gr 60 and gr 120 respectively but from the 23rd onwards it became impossible to give the mixture two hourly owing to the œsophageal spasm The dose had to be reduced and it was no longer possible to keep accurate records of the amount taken

Oct 19th: Condition materially unchanged; two generalised spasms during the day but no new signs limbs not yet affected A pint of glucose saline given per rectum night and morning

On Oct 20th and 21st his condition deterior pulse-rate rose to 100 and swallowing the puncture especially to leakage of cerebro spinal fluid through the puncture hole The use of as fine a needle as possible prevented neither leakage nor headache He advised inserting the needle in the midline by steady pressure, with the bevel in the long axis of the body, and the patient in the Trendelenburg position Imperfect technique produced gross damage to the nervous tissue, and he had seen two such cases after too high a puncture The needle should never be inserted above the third lumbar vertebra Failure to get into the proper space was due to inexperience When bleeding from injured vessels occurred he wondered if sequelæ could be due to a hæmatoma or to the later development of adhesions The effect of the drug should wear off immediately after operation The commonest trouble was interference with the emptying of the bladder, common after rectal operations with any anæsthetic He thought that the anæsthetic drug itself produced the symptoms, some of which for example the headache and rigors following Percaine might be due to faulty preparation of the anæsthetic solution Two of the commonly used solutions contained alcohol which added an unnecessary risk The concentration of the drug was extremely important, dilute solutions producing temporary and concentrated ones permanent paralyses He preferred larger quantities of lower concentration and suggested for greater safety the mixing of the anæsthetic solution with an equal quantity of cerebro spinal fluid before injection

SPINAL ANÆSTHETICS IN EXPERIMENTAL WORK

Prof A D **Macdonald** spoke as an experimentalist He would be the last to apply conclusions from dogs and cats directly to man, but the difficult problem of why spinal anæsthetics sometimes caused death on the table or were followed by bladder or rectal symptoms called for all possible help In the cat spinal anæsthesia could be easily produced His first endeavour had been to determine with his co workers the fate of the drug used They had investigated numbers of the procaine series (Larocaine, Tutocaine Planocaine) which coupled with guaiacol disulphonic acid give a brilliant colour suitable for colorimetric study They had proved that they were estimating the anæsthetic itself and not a degradation product In cats 0·5 c cm of a 10 per cent solution of procaine corresponding to a dose of 20–30 c cm in man could be safely injected The effect lasted 30-50 minutes knee jerks returning with a concentration in the lumbar fluid of 0·05 per cent Ten minutes after injection the concentration in the lumbar fluid was 2–3 per cent and in the cisterna magna 0·002 per cent, showing amazingly little spread headwards The concentration in the blood was low, the full spinal dose had been administered slowly intravenously in man without ill effect The acute effects of lumbar injection in the cat were increased movement of the diaphragm owing to the paralysis of the intercostal muscles and fall in blood pressure from 130 to 80 mm Hg Injection at the third cervical level produced diaphragmatic paralysis with increased thoracic movement and into the cisterna magna intercostal and diaphragmatic paralysis Blood pressure first rose falling with failure of the respiratory centre Artificial respiration prevented death

Sequelæ after 0·5 c cm of a 10 per cent solution were recognised in the experimental animal by tail droop bladder and rectal symptoms and weakness of the limbs No other constituent of the injected solution except the actual anæsthetic (Duracaine, Planocaine, Stovaine) produced sequelæ in cats The severity of the symptoms varied directly with the concentration of the drug Using 2½, 5, 10, and 20 per cent solutions, the incidence of paralysis was respectively 0 10, 43, and 80 per cent Two well established ideas should be considered in any explanation of these sequelæ Sherrington had said that a change in any part of the spinal cord was more likely to occur at the synapse than in the fibres, and Gasser had shown that the finest fibres were those most easily and permanently affected by local anæsthetics

SOME SUGGESTIONS

Dr **Fergus R Ferguson** said that post operative difficulties with micturition or defæcation were too often disregarded In Manchester many sequelæ had been seen and he had records of thirteen cases with the neurological picture of a cauda equina lesion seen between August, 1933, and March, 1935, after heavy duracaine anæsthesia Eleven were men and two women, and the age varied from 17 to 70 years The eight severe cases in the series followed emergency operations There was much variation in severity, the clinical features being absence of one or more leg tendon reflexes, retention of urine, incontinence of fæces, sensory loss over the third, fourth, and fifth sacral areas, and loss of sexual function It seemed that the roots nearest the injection were in the greatest danger Sequelæ, especially retention of urine and fæcal incontinence, though seemingly trivial at the time, could be devastating and lasting As to ætiological factors, he thought that concentration of the anæsthetic and duration of the contact were most important In the series recorded the site of the lesion was the cauda equina, though other syndromes were reported Trauma alone could not cause sequelæ, though it might play a part It seemed impossible for hæmorrhage to produce such widespread lesions, and there was no evidence of bleeding It was strange that after tens of thousands of diagnostic lumbar punctures there had been no sphincter nor reflex complications, and they did occur after a perfect anæsthetic puncture The variation in the severity of the symptoms seemed incompatible with trauma Post mortem and experimental evidence suggested a toxic effect No local cause could explain the frequent sixth nerve palsy Other constituents of the injected fluid had come under suspicion especially alcohol but 3 c cm of 90 per cent alcohol could be injected without sequelæ Since heavy duracaine had been introduced for its slow diffusion, the undiluted procaine might be held too long in contact with the nerves He concluded that duracaine was dangerous, and should not be used, and that for safety the procaine solution should be diluted with an equal quantity of cerebro spinal fluid, and given slowly

DISCUSSION

Dr **Russell Brain**, opening the discussion reported a case of myelomalacia in a man of 63 following Spinocaine beginning with pain in the lumbar region one week after operation Pain in the left knee followed with difficulty in walking, and numbness first in the left leg, then spreading to the waist Later there was retention of urine and finally death from intercurrent infection The time intervals in the progress of the case suggested a possible sensitivity to foreign protein

Dr **Dorothy Russell** gave an account of the changes in the central nervous system in this case The main lesion was a softening of the spinal cord between the twelfth thoracic and second lumbar levels with necrosis of the whole substance of the cord complete in the grey partial in the white matter. Microscopic study showed thrombosis and necrosis of the walls of the pial arteries. She considered that the primary effect was on the vessels with secondary necrosis of the grey matter. There was no evidence of direct trauma, nor of old hæmorrhage nor was there anything to suggest infection introduced by the needle.

Dr H K **Ashworth** said that the sequelæ could be divided into those dangerous to the patient and those that were transient. Of the first he mentioned the cauda equina lesion described by Dr Ferguson and the precipitation into activity of incipient disease of the nervous system. He blamed the concentration of the anæsthetic and its combination with other injected substances at the site of the injection. The chief transient sequela was a sixth nerve palsy of which he had seen two examples in a total of some thousand percaine anæsthetics. Though one had lasted for four months both had cleared entirely. More serious as far as the dissatisfaction of the patient with the anæsthetist was concerned was headache due to alteration in cerebro spinal fluid pressure. In a recent series in the German literature it had been shown that the incidence of headache was higher in the younger than in the older patients but was unrelated to the size of the lumbar puncture needle. Its occurrence even after preliminary Evipan suggested that the functional element was small.

Dr **Wilfred Harris** could not believe that the sequelæ were the direct effect of the action of concentrated anæsthetic on the nerves. He had a large experience of the injection of cases of sciatica with 2 per cent and 5 per cent Novocain and in no case was there ever more than a transient anæsthesia or paræsthesia in the sciatic distribution. He regarded the lesion as sacromyelitic, and thought that the myelitis might be due to a vasoconstrictor effect of the procaine.

The **President** referred to a case described by Langton Hewer where percaine had been used and quoted two cases of temporary mania following that drug recorded by Dickson Wright. He asked what was the effect of the anæsthetic on the spinal blood vessels.

Prof. **Macdonald** asserted that straight percaine and novocain had no effect on the blood vessels. He and his students had given frequent injections into the skin of the procaine series and had found that in the absence of adrenaline there was if anything vasodilatation. The solutions were 10 per cent and stronger than those used by Dr Harris.

Dr **Russell** referred to unpublished work that demonstrated fibrinoid necrosis in the renal vessels of the rat following injection of pituitary extract.

Dr **Ferguson** said that he had not necessarily assumed a direct action of the anæsthetic on the cauda equina in the cases with the clinical syndrome of a cauda equina lesion. He had not had time to describe post mortem appearances in three of his cases. There was evidence of vascular disease an increase of hyaline material in the vessels walls and decrease in the size of the lumen in the posterior root ganglia in the lumbosacral region.

Dr **Purdon Martin** referred briefly to a case of ascending myelitis progressing to encephalomyelitis following spinal anæsthesia. Unfortunately he had not seen the pathological material.

Dr **Critchley** emphasised that the object of the meeting was not in any way to disparage a method that had proved itself useful, if not invaluable in medicine but rather to promote discussion to try to prevent the unpleasant and sometimes disastrous sequelæ.

LIVERPOOL MEDICAL INSTITUTION WITH MANCHESTER MEDICAL SOCIETY

A joint meeting was held at Liverpool on March 4th with Prof R E **Kelly** in the chair.

Mr R L **Holt** read a paper on

Gastritis

in which he stated that for the past eighteen months he had been collecting fresh specimens of stomach following partial gastrectomy for chronic gastric ulcer. His histological findings were substantially the same as those described by Konjetzny Kalima Puhl and others. They differed simply in degree a change readily explainable by the difference between pre-operative treatment in this country and in continental clinics. In more than half his cases there was naked-eye evidence of a subacute gastritis which was most marked in the pyloric antrum but extended to a lesser degree into the duodenum and body of the stomach. On microscopical examination all his specimens showed evidence of a subacute or chronic gastritis. The histological changes were distributed in a patchy fashion throughout the gastric mucosa, erosions alternating with areas of normal mucosa hypertrophy and atrophy. He suggested that in this country we were apt to stress the importance of the presence of a definite peptic ulcer and to neglect the larger number of cases which had all signs and symptoms of peptic ulceration except X ray evidence of an ulcer. There was no doubt that the signs and symptoms usually associated with chronic peptic ulcer could be reproduced by a pyloric gastritis according to Faber the signs and symptoms were produced by the gastritis and not by the ulcer. Mr Holt went on to consider the factors generally considered of importance in the genesis of chronic gastric ulcer and said in his view chronic ulcer might well be considered as a complication occurring in a case of pyloric gastritis. Most patients who consulted their doctors on account of gastro intestinal disturbances were still classified non-committally as dyspepsia of one sort or another. He hoped that the recognition of the frequent occurrence of gastritis and the signs and symptoms which it produced would prove to be a great step forward in penetrating this diagnostic fog.

In the discussion which followed, Prof. **Henry Cohen** referring to the president's question What is indigestion? feared that if certain current continental ideas on gastritis were accepted the impetuous surgeon would not stay *for an* answer but would proceed to partial gastrectomy. Such mutilation was in his view quite unjustifiable in our present knowledge of the subject. We had yet to define with much greater care the condition of chronic hypertrophic gastritis the factors which played a part in its production and its relationship to gastric ulceration. It had been stated that gastritis almost invariably precedes ulceration and cancer of the stomach but Church, Walters and Wellbrock of the Mayo Clinic had shown that pyloric obstruction itself was a very important factor in producing gastritis which was practically absent in cases of carcinoma of the stomach without pyloric obstruction but was present in eleven out of twelve cases with pyloric obstruction. Many exogenous factors could cause inflammatory changes in the gastric mucosa—mechanical, chemical, thermal and bacterial The president had referred to the observations of Beaumont on Alexis St Martin, Prof Cohen recalled that after St Martin had been drinking "ardent spirits" for nearly a fortnight, Beaumont found characteristic changes of gastritis including erosions Atrophic gastritis with achlorhydria had been studied in much greater detail Its association with hyper and hypochromic anæmias, subacute combined degeneration of the spinal cord certain types of polyneuritis and steatorrhœa had been firmly established

Mr J Howell Hughes said that gastroscopy had revealed three types of gastritis (*a*) the catarrhal, which showed change of colour of the mucous membrane from the normal orange to a deep red colour often with submucous hæmorrhages, (*b*) the atrophic, pale flat mucous membrane usually seen in anæmias, and (*c*) the hypertropic type Mr Holt had discussed the pathological changes in the last, but similar changes were seen by means of gastroscopy tortuous and redundant rugæ small granulations on the rugæ, sometimes small varicosities and in some cases small acute erosions In this type a certain rigidity of the mucous membrane was obtained so that rugæ which normally flattened with air distension were still present and therefore it seemed as if a permanent change in the mucous membrane had taken place

Mr John Morley said that while it had been certainly proved that gastritis could be found in the mucosa surrounding gastric and duodenal ulcers in a large proportion of cases we had hardly evidence to prove whether this condition was a predisposing cause or a result of the ulceration Where pyloric gastritis was present without gross ulceration it was impossible to detect it without opening the stomach (apart from previous gastroscopy), and he felt some misgivings lest if ever such an intangible lesion came to be regarded as an indication for partial gastrectomy, that very valuable operation might fall into disrepute With regard to the atrophic gastritis associated with achlorhydria the difficulty was that the condition was very common, and increasingly so with advancing age and as a rule gave rise to no dyspeptic symptoms The claim sometimes made that atrophic gastritis was a common predisposing cause of cancer he regarded as entirely unproved

Dr L Savatard read a paper illustrated by lantern slides on

Tumours of the Skin

in which he stressed the clinical and histological evolution of the epithelioma in its progress to metastasis The diagnosis of the early epithelioma was thoroughly portrayed and the multiformity, clinically and histologically, of cutaneous cancer was demonstrated

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NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

At a meeting of this society held at Liverpool on Feb 26th with Dr J W Bride the president, in the chair a case of

Mucocele of the Appendix

was shown by Mr J W Burns

The patient was a female, aged 42 who had found a lump in her side She had had four full time normal labours the last one 9 years previously Menstruation had been normal Her only symptom was a "stretched" feeling in the right side relieved by loosening her clothing There was no history of indigestion, vomiting, or pain On examination a sausage shaped tumour could be felt in her right iliac fossa It was not absolutely fixed and there was no tenderness or rigidity Per vaginam her pelvic organs appeared normal and the lower pole of the tumour could just be reached at the brim of the pelvis An X ray investigation of the alimentary tract was made which showed that the cæcum was displaced towards the midline by the tumour In consultation it was agreed that a laparotomy should be performed The tumour was found on the outer side of the cæcum from which it had become sealed off but it had become attached to the parietal peritoneum on the posterior wall by its distal end The tumour was removed and found to be filled with translucent fluid Its size was 7 by 3 by 2 in

Mr Burns said that great care was taken to avoid rupturing the cyst In his opinion if this had taken place a condition of pseudomyxoma peritonei would have arisen with the appendix as the original focus

The President said that a mucocele of this size must be very uncommon He wondered what the connexion between pseudomyxoma peritonei and mucocele of the appendix really was

Full-term Extra uterine Pregnancy

Dr F J Burke showed two cases with extra uterine pregnancies that had gone to term In each a macerated fœtus was found at laparotomy From one a degenerated placenta was removed without bleeding, but the patient died an hour later from hæmorrhage into the gestation sac In the second the placenta was attached to the uterus only by a thin pedicle and it was easily removed, the patient recovering

Prof Miles Phillips said that in his experience the management of the placenta was the important point at operation He thought it best to leave it alone He had had 6 cases, 1 of which he opened again some years later for another condition Nothing was found in the abdomen except a few adhesions —Dr Robert Newton inquired whether it would be an advantage if the fœtus were dead to leave the case alone for some time —Mr St George Wilson showed a photograph taken post mortem of a woman aged 80 who had died of a broken femur In the abdomen was a large calcified fœtus —Dr J H Willett said that he thought it very bad practice indeed to start exploring the abdomen too freely owing to the risk of serious hæmorrhage from separation of the placenta He thought the operation should be done at once when the fœtal heart had ceased —Prof W Fletcher Shaw mentioned the case of his own in which a living fœtus had been removed

Dr Burke, in reply, said that he thought his first case would have died of septicæmia if she had not been operated on In both his cases a diagnostic difficulty had been that no fœtal limbs could be felt

Locked Twins

Dr W S Wright showed a case of locked twins in a primigravida aged 21 The first fœtus delivered had to be decapitated to free the second, which was in a state of white asphyxia when born and did not live The *mother recovered*

Dr Wright said that von Braun had estimated the frequency of locking as 1 in 90,000 He said there were four ways in which locking might occur (1) Both fœtuses presenting by the vertex entered the pelvis side by side (2) As in his case, the first child presenting by the breech, the second by the vertex the heads become locked by the chins (3) The first child, presenting by the breech may become locked by the chin on the body of the second fœtus lying transversely (4) Both fœtuses presenting by the foot may enter the pelvis together

Prof. PHILLIPS said that he thought a deficiency of liquor amnii was a possible cause —Dr C M. MARSHALL said that for purposes of decapitation a saw could be passed round the fœtal neck with the thumb and forefinger using a Blond Heidlar thimble

Varicocele in the Female

Prof. FLETCHER SHAW said that while all text-books mentioned the condition none gave a satisfactory account of it He quoted Emge who had said that the condition was the result of damage to the fibro elastic suspensorium and that only a small portion was the result of lesions in the walls of the vein. Carlos Castano had stated that it was the disease with the most subjective and the fewest objective symptoms. Graves had pointed out that the condition was often mistaken for inflammatory adnexal disease. Prof Fletcher Shaw said his attention was first drawn to the subject by the late W E Fothergill in 1921 He said he was rather sceptical of a condition which could only be recognised in the erect position Shortly afterwards his doubts were rudely shaken as in 1923 he had three cases in one month the notes of which he read to the society They were aged 26 35 and 31 and complained respectively of dysmenorrhœa menorrhagia, and backache, of recurrent acute abdominal pains and of aching pain in both iliac regions They were diagnosed as chronic salpingitis or matted appendages and were treated by ligation and excision In one case the condition recurred on the opposite side and required pan hysterectomy The other two were cured Prof Fletcher Shaw said that some thought retroflexion a probable cause of this condition but only one of the three had a retroflexed uterus He said that pressure on the broad ligament on the left side by the sigmoid or rectum seemed to be a factor Later in 1924 he had two more cases Now after an interval of 15 years he had met with another Summing up he said that in each of the 6 patients the mass was large enough for him to diagnose a pelvic tumour In 5 the pain was on the left side. In the first 3 he had excised the veins and not cured the patient In the others a more drastic procedure had cured the symptoms He said that the ætiology was obscure. There was no pronounced laxity of the pelvic floor He thought treatment was unsatisfactory and that the condition was more common than generally supposed

Mr J E STACEY thought that the condition was very common and due to coitus interruptus Examination in the erect position was valuable in diagnosis In his opinion only a hysterectomy would cure a severe case.—Mr T F TODD also thought these cases were due to an unsatisfactory sex life —Prof PHILLIPS said that it was noteworthy that the patient complained of pain the moment she stepped out of bed. He had rarely excised the veins in older women if there was a prolapse he did a vaginal hysterectomy

Prof FLETCHER SHAW in reply said that he was doubtful about coitus interruptus being the main cause; of his first three cases two were virgo intacta.

Sarcoma of Ovary and Lung

The PRESIDENT showed a specimen of malignant tumours of the ovary and lung in a girl aged 12

The patient was sent to him with a history of loss of weight and a rapidly swelling abdomen for some months She had recently developed a pain in the left chest slight cough and blood-stained sputum Menstruation had not yet commenced. On examination she was cyanosed and had a pulse rate of 130 The abdomen was fully occupied by a painful and cystic tumour Free fluid was present Dr Bride said he thought the diagnosis lay between a tubercular ascites and pleurisy or an ovarian dermoid or sarcoma of the ovary He performed a laparotomy and found a soft ovarian tumour the size of a football. The tumour was removed without difficulty A needle was passed into the left pleura and some blood stained fluid withdrawn The patient was much relieved for a few days, but she died on the eleventh day from a profuse hæmoptysis

Dr Bride showed three sections two from the ovarian tumour and one from a nodule in the lung He said that in his opinion the case was one of a mixed celled sarcoma of the ovary with secondary deposits in the lung He said that ovarian tumours were not uncommon in young girls. Bland Sutton had referred to a hundred cases of ovariotomy in girls under 15 Of these 41 were simple cystadenomata, 38 were typical dermoids and the remaining 21 were sarcomata Dr Bride said that sarcomata occurred much earlier than carcinomata the majority at the age of puberty They were usually bilateral round celled and extremely malignant. Solid ovarian teratomata contained embryonic tissues from all the layers of the blastocyst They were frequently malignant with sarcomatous metastases Chorion epithelioma of the ovary might represent a form of teratoma

Operation for Prolapse

Mr ST GEORGE WILSON showed a cinematograph film of the interposition operation for prolapse He said that it was especially indicated in cases with a big cystocele which were difficult to cure by Fothergill s operation without unduly narrowing the vagina. A second important indication was that the patient should have passed menopause If the cervix was elongated it should be amputated in the usual way He described his technique and said it was as practised and described by the late Prof Blair Bell.

Prof FLETCHER SHAW said he thought a reasonable criticism of the operation was that after it had been completed the cervix could still be pulled down to the vulva He thought the operation must be restricted entirely to women beyond the menopause

Dr S B HERD thought there were two indications for the operation (1) a previous failure with colporrhaphy and (2) a retroflexed uterus that needed suspension He had had more difficulty with micturition in his cases after this operation than after colporrhaphy

Mr STACEY said he had seen a case of pregnancy after this operation There had been no difficulty during pregnancy but a Cæsarean section was required —Mr W GOUGH had seen one case where a carcinoma corporis occurred after the operation.

Mr WILSON said that in his opinion a bulky uterus was a contrary indication He thought that even with a small uterus the operation was useful as in most cases cystocele was the main trouble, and the use of this operation obviated making the vagina too small. He said that he always amputated the cervix in these cases

REVIEWS AND NOTICES OF BOOKS

British Encyclopædia of Medical Practice

Vol II By Various Authors Under the general editorship of Sir HUMPHRY ROLLESTON, Bart , G C V O K C B , M D , D Sc Emeritus Professor of Physic Cambridge With the assistance of Prof F R FRASER M D F R C P , Prof G GREY TURNER, M S , F R C S , Prof JAMES YOUNG, D S O , M D F R C S L , Sir LEONARD ROGERS K C S I , F R C P , F R C S , F R S and F M R WALSHE *O B E M D , D Sc , F R C P* London Butterworth and Co , Ltd 1936 Pp 767 35s

THE second volume of this important work, with its formidable array of editorial and contributory talent opens with an article on apraxia by Macdonald Critchley and takes us as far as carriers in infective disease by J A Arkwright It may be remarked in passing, that the alphabetical method of describing diseases produces some strange bedfellows for we find athetosis hobnobbing with athletics backache with baker's itch, biliousness with birth palsy, and caisson disease metaphorically rubbing shoulders with cancer But this, though in itself a little disconcerting at first, is no great matter a more real objection to the system is that it necessitates much cross reference which may prove exasperating to the earnest student who for example if he turn up bacilluria ' is referred to coliform bacillary infections ' which is in another volume The articles themselves, however, are as good as they ought to be Perhaps of special value to practitioners might be mentioned W S C Copeman s on rheumatoid arthritis which is full of sound sense and free from fads and A G Timbrell Fisher's on osteo arthritis Another interesting article is that by J B Mennell on the treatment of backache and lumbago by various manipulative and supporting measures which is illustrated with some excellent sketches G W Bray deals fully with the vexed problem of asthma, and occupational disease is well represented by W E Cooke s article on asbestosis, illustrated with some beautiful microphotographs taken by the author and C F Hill C P Symonds and Hugh Cairns collaborating on the subjects of brain abscess and brain tumour supply a valuable note on the use of hypertonic salt solutions for temporarily relieving increased intracranial tension by which means a comatose patient will usually recover consciousness for long enough to coöperate in a neurological examination In the article on cancer by W I Gye and John Hosford the modern methods of treatment, including the radium " bomb," are well summarised T S Rippon s article on aviation describes the existing scheme for the examination of pilots the methods used for examining the special senses and the special tests of fitness for aerobatics which demand normal circulatory and muscular tone combined with good abdominal muscles It seems that blacking out due to cerebral anæmia can be hindered or prevented by contracting the abdominal muscles and so raising the intra abdominal pressure In the sphere of pediatrics Alan A Moncrieff writes on Still s disease and cancrum oris and Norman B Capon on asphyxia in children J F Halls Dally writes sanely on blood pressure high and low and C J Lakin on arterial disease and degeneration Athletic injuries by W F Tucker and athletics by Adolphe Abrahams with a note on the nervous factor in sport go to show that the English can still take their pleasures sadly Abrahams is an opponent of strenuous sport for women on the ground that it " diverts energy from channels for which it is specially required," by which presumably he means childbearing Quite apart from the fact that, under existing conditions, *a large number of women, condemned to childlessness* seek an outlet for their energies in athletics, the contention that the habit of taking strenuous exercise makes for difficult labour is quite unsupported by evidence

Inorganic Chemistry

A Survey of Modern Developments

By SIR GILBERT MORGAN, D Sc , LL D , F R S , Director of Chemical Research , and F H BURSTALL, M Sc , A I C , both of the Department of Scientific and Industrial Research of the Chemical Research Laboratory, Teddington Cambridge *W Heffer and Sons, Ltd 1936 Pp 462 15s*

THE main function of this book is to illustrate the statement that the type of chemical combination designated by the chemist as " coördination " is not merely characteristic of substances like cobalt ammines, but actually enters into the everyday laboratory experience of many branches of pure and applied chemistry In an introductory chapter the classification of the elements and the interpretation of chemical valency in terms of the electronic structures of the atoms are summarised. In the next ten chapters the various types and structures of the compounds formed by the individual elements are dealt with systematically, following the periodic order of the elements Special attention is given to recent advances in this subject and to the discussion of the coördination compounds of the elements The latter part of the book is devoted to the description of coördination compounds employed in the arts and industries and of compounds of particular types—e g , the carbonyls and nitrosyls The final chapter on the organic derivatives of metals and metalloids, many of which (e g , arsenicals and mercurials) are therapeutic agents, contains much matter of direct medical interest The book summarises an enormous amount of information which is of considerable interest to the chemist, but mostly too highly condensed and recapitulatory in style for the general reader The chapters on the isotopes of hydrogen and heavy water, however, and on the natural and artificial transmutation of the elements give useful accounts of some of the more outstanding recent developments in this field of inorganic chemistry

The Art of Treatment

By WILLIAM R HOUSTON, A.M , M D , F A C P , formerly Professor of Clinical Medicine, University of Georgia , formerly Visiting Professor of Medicine, Yale in China London Macmillan and Co , Ltd 1936 Pp 744 21s

IN spite of the truth of the statement that the main essential of treatment is diagnosis, the best management of a sick man is not a simple corollary of a correct diagnosis but an art which can be learned only through study and practice The medical schools probably deserve the criticism made by others as well as by Dr Houston that they pay too little deliberate attention to the teaching of treatment , the medical staff leaves half the treatment of inpatients to the nurses, and it seldom undertakes the full prolonged responsibility of looking after an out-patient in the way that a good family doctor would do it

Dr Houston's book is an attempted answer to this criticism. It is written for students and young doctors who already know something of medicine of pharmacology and of therapeutic technique It is concerned with the approach to the patient the art of using all that knowledge to the maximum advantage in his particular case A long introduction deals with general principles which range from the dosage of drugs to the question of doctors fees the writing is discursive with a certain conscious brightness, but the plea that treatment needs to be thought about more thoroughly and more honestly, is undoubtedly sound. The body of the book deals in turn with the broad subdivisions of therapeutics under which diseases roughly group themselves according to the chief mode of treatment they call for There are the patients who are to be treated mainly by nursing care diseases amenable to specifics conditions in which the chief therapeutic method is psychotherapy or guidance—this section occupies one third of the book conditions where treatment mostly means a limitation of life conditions where treatment is largely based on physiological considerations and finally conditions in which treatment is tentative and experimental. The discussions are fairly full, the style easy almost conversational, with frequent use of anecdote or illustrative case history and the author is concerned more with his general point of view than with comprehensiveness of detail. The book certainly exemplifies the American willingness to discuss at length matters which the Englishman either does not think about or takes for granted but if we admit the criticism of the schools which it is written to meet, we must welcome it as a helpful contribution to the teaching of therapeutics. There can be no quarrel with this generalisation of the author's "It comes out that most therapeutic conceptions and plans are simple that success turns mostly on doing simple things well

Die "atypische" Pneumonie

By Dr Frank Kellner, Facharzt für Lungenkrankheiten Leitender Arzt der Tuberkulose Fürsorgestelle Kassel Munich Otto Gmelin. 1936 Pp 52 M.2 70

Chest physicians have long been familiar with forms of pulmonary inflammation which do not fit in with the classical descriptions of lobar or broncho pneumonia. Often these atypical pneumonias begin with a short mild febrile attack accompanied by cough but in some the course is afebrile throughout Physical signs are few although X ray examination shows an opaque area usually near the hilum but quite common in any of the lobes Resolution takes place in the course of a few weeks and the chief interest in the condition lies in the difficulty of distinguishing it from an early tuberculous infiltration

Dr Kellner considers that recent epidemics described as influenza and characterised by inflammatory processes of the upper respiratory tract, the bronchial tubes and the lungs have included so large a percentage of these atypical pneumonias that the term atypical should no longer be applied to them The few physical signs combined with the fact that these patients rarely undergo X ray examination rather than its rarity accounts for the scanty attention paid to the clinical differentiation of this condition. Although it is occasionally difficult to distinguish between pneumonic consolidation and tuberculosis of the hilar glands it is chiefly in the initial infiltration type described by Assmann that confusion occurs The absence of upper respiratory and bronchial inflammation and the predilection of tuberculous infiltrations for peripheral and especially subclavicular sites may help in the diagnosis but often, according to Dr Kellner it is only possible to distinguish the conditions by following on the screen the course they pursue He thinks that many of the cases of initial infiltration which are said to have cleared up in a few weeks have really been patches of non specific inflammation.

His brochure which is illustrated by a small number of carefully selected and well reproduced radiograms provides a useful summary of our knowledge on this interesting and important subject.

Manual of Public Health Laboratory Practice

By J R Currie, Henry Mechan Professor of Public Health University of Glasgow Edinburgh E and S Livingstone 1936 Pp 378 21s

The design is to cover the field of laboratory work with which those engaged in public health work or proposing to acquire a D.P H must be acquainted. The author succeeds in producing a manual in which no aspect of laboratory work connected with public health escapes adequate notice, and has outlined technical details so clearly as to provide a guide to anyone who knows his way about a laboratory The indications suggested for the use of the various procedures and the interpretation of the results are orthodox and sound. Sections are included on entomology and meteorology which contain useful matter rarely to be found except in more specialised works The appeal of this book will not be to laboratory workers only To the practising medical officer of health it will prove invaluable

The Principles of Dental Medicine

Second edition By F W Broderick, M R C S L R.C P L D S Hon Dental Surgeon to the Royal Victoria and West Hants Hospital. London: Henry Kimpton. 1936 Pp 575 30s

Dr F W Broderick was one of the first to expound the view that dental disease is due to a local expression of general disease This thesis was elaborated in a book which appeared in 1928 under the title Dental Medicine While the main concept remains the same in this second edition Dr Broderick slightly changed the title and has added so much new matter that he has produced what is practically a fresh book He claims that his goal has been reached and that dental medicine in contradistinction to dental surgery is now a practical proposition

The book is divided into three parts In the first the writer describes certain biochemical factors which he regards as causative in many forms of dental disease blood reactions colloidal states the endocrine and vegetative systems and calcium metabolism The amount of evidence he adduces to support his theories is impressive in its bulk but many of the views he quotes are individual ones which are themselves open to criticism The second part deals with ætiology and treatment both remedial and preventive of dental disease and represents the application of the principles enunciated in the first part Dental caries and pyorrhœa are in Dr Broderick's view essentially due to a disturbance of colloidal equilibrium which affects the acid base balance of the blood If a condition of acidosis is produced by such disturbance the end result so far as the teeth are concerned is dental caries, on the other hand, a state of alkalosis is thought to lead to pyorrhœa Dr Broderick has now linked up his work with the views expressed by Dr J R McDonagh and appears to accept completely the latter's concept of disease In treatment a variety of methods is recommended in which dentistry as usually understood plays little part Alkalis such as sodium bicarbonate are used with a view to the prevention of caries and derivatives of cholin and ergot in cases of rampant caries Dr Broderick advocates the administration of small doses of insulin to children with extensive caries on the assumption that caries is due to a dehydration of the colloid particles and that insulin will bring about hydration For pyorrhœa he recommends ammonium chloride, thyroid extract and colonic lavage, and follows up this treatment by subcutaneous injections of various kinds There seems to be little scope for the ordinary methods of dentistry in his concepts of dental disease The illustrative cases recorded seem to have shown considerable improvement while under treatment along the lines suggested

Cosmetic Dermatology

By Herman Goodman, B S, M D London McGraw Hill Publishing Co, Ltd 1936 Pp 591 36s

At first glance this book is likely to bewilder the reader, for Dr Goodman has apparently cut himself adrift from all ordinary conventions of text book arrangement But the knowledge he displays is prodigious even if his method of imparting it is peculiar Not only physicians and dermatologists but beauty specialists and students of cosmetics should be grateful to him, for here at last, combined with a wealth of cosmetic pharmacy, is just the type and quality of honest dermatology they need They will learn for instance what a "pore" really is, and why when enlarged" it cannot be ' shrunk.' The swindle of bleaching by creams and lotion is also exposed, and the futility of attempts to feed the skin from without, or to eliminate wrinkles by tissue or muscle oils It is easy to see that the author is a dermatologist at heart, although unlike most of them he has not scorned to acquire some knowledge of cosmetics

Part I of his work is a dictionary of ingredients, in alphabetical order from acacia to zinc sulfide (so spelt) All those commonly used by dermatologists as well as manufacturing chemists are set out, although it is not clear why such proprietary injections as Afenil or ointments such as Cycloform should be included under their manufacturers' names, while strontium bromide is not alloted its proprietary name of Lkzebrol The author does not limit his observations to the scope suggested by his title, no self respecting beauty specialist is likely to be called upon to treat infantile eczema

In Part II the ingredients previously considered are combined in "tested formulæ' and attached in groups of 6 to 20 to the particular disease or "blemish" under consideration These again are arranged in alphabetical order beginning with acne and ending with vanishing creams and vitamins All that pertains to cosmetics is discussed depilatory, dusting and face powders, hair dyes, lipsticks, eye preparations including eyewash, eye tissue cream, eye-shading bases eyebrow creams, eyelash oil, even a "pain reducer" for eyebrow epilation We deprecate the inclusion of chapters on the treatment of burns, poison ivy, psoriasis, scabies, ringworm, and wounds, for it is surely unwise to encourage experts in cosmetics to make diagnoses and recommend the treatment for diseases, infections, and injuries

Appendices on cosmetic colours derived from different sources, on perfumery and on weights and measures conclude the book, which is likely to appeal not only to dermatologists and cosmetic specialists but also to the laity

Blood Cultures and their Significance

By Hildred M Butler, B Sc Melbourne, Bacteriologist, Baker Institute of Medical Research, Alfred Hospital, Melbourne London J and A Churchill Ltd 1937 Pp 327 15s

Blood culture has been a routine procedure in clinical bacteriology for many years, but in many institutions its importance has not been fully realised either by clinician or bacteriologist Possibly this is because nobody is particularly interested The clinician asks for a blood culture not really expecting to obtain much information The bacteriologist does the culture in something of the same spirit, and mostly the result is either negative or negligible in the sense that a growth of non pathogenic organism is obtained The clinician's scepticism as to the value of blood cultures is partly at least attributable to lack of pains in the bacteriologist to ensure that the best cultural results are obtained with the minimum of contamination Miss Butler, following a study and trial of published methods, has here laid down an efficient technique whereby fallacious results could be largely avoided It may well be that some of the methods she describes could be further improved by the use of devices elaborated by individual workers who have not published them in detail, but for the omission of unpublished methods Miss Butler can hardly be blamed Quite apart from technique the practising bacteriologist can find here a useful summary of the results which have been achieved by blood culture in almost all conditions The interesting chapter on bacteræmias following operative procedures deserves attention of surgeons and dental surgeons

A book of this description serves as a reminder of the results achieved by blood culture, and no bacteriologist, however senior will feel that the time spent in reading Miss Butler's book has been wasted

Physician, Pastor, and Patient

By George W Jacoby, M.D, Past President of the American Neurological Association and the New York Neurological Society London and New York Paul B Hoeber (Medical Book Department of Harper Bros) 1936 Pp 390 15s

This considerable volume represents the musings of a wise physician over a wide field of medicine in its social and religious relationships, and inasmuch as the author casts his eye over the whole history of culture, he displays a wide, if not penetrating, erudition In surveying the health of mankind from one part of the world to another, he maintains an attitude which is dignified and catholic in taste and tolerance The scattered wisdom in this book is not sufficiently well integrated for one to make out a consistent philosophy of medicine, but many readers will find entertainment both in the text and in the charming illustrations drawn chiefly from Oriental art

THE LANCET

LONDON SATURDAY, MARCH 27 1937

ERGOTAMINE TARTRATE FOR MIGRAINE

In 1934 BROCK O SULLIVAN and YOUNG reported that ergotamine tartrate was effective in cutting short an attack of migraine. This discovery was made empirically after the trial of a number of substances reputed to be of value, and has since been confirmed by other workers. Dr MARY E. O SULLIVAN[1] has recently reported the results of the trial of this remedy in a larger series of cases. Over a period of two years 97 patients were treated for 1132 headaches and 89 of these were relieved of a total of 1042 attacks which has been calculated as a saving of 30 000 hours of suffering. The subcutaneous method of administration of the drug was found to be more effective than the oral relieving a larger proportion of patients and giving relief more quickly. An initial subcutaneous dose of 0 25 mg was given and repeated after two or three hours if the headache persisted or later if it returned. It was rarely necessary to give more than 0 5 mg in a single dose, but the longer after the onset of the attack the treatment was given the larger the dose needed. For oral administration as many as five 1·0 mg tablets might be necessary in a single dose to cut short an attack.

On another page is a letter from Dr T W GORDON KELLY describing his experience of ergotamine tartrate in the treatment of his own migraine. Finding that this drug would cut short his headaches after many other remedies had proved useless he tried it as a prophylactic taking 0 25 mg subcutaneously at bedtime on the eve of a busy day and found that in this way he could guarantee himself a day free from headache. After the frequent administration of ergotamine tartrate for many months he has experienced no ill effects either immediate or remote. Dr O SULLIVAN discusses the prophylactic use of this drug and advises against it. It must be remembered that few sufferers from migraine have headaches as frequently as Dr KELLY and the regular administration of such a powerful substance for many years to avert attacks occurring only at intervals of weeks or months is clearly undesirable. Moreover, since in almost all cases an attack can be aborted within an hour or so by this treatment it is more economical to cut short an attack when it arises. The prophylactic use of ergotamine therefore though interesting is not widely applicable. Dr KELLY confirms the observation that ergotamine tartrate is far more effective when given subcutaneously than when swallowed. This may be because during an attack of migraine when nausea is present, and still more after vomiting has occurred absorption from the stomach is impaired. At this stage, in fact ergotamine may make the vomiting worse without improving the headache. Dr KELLY's note that sublingual administration is far superior to ingestion will if generally true prove of considerable value since it will make the patient independent of the doctor's hypodermic needle and enable an effective dose to be taken at the earliest possible moment. Also the effective dose is less two tablets given sublingually being equivalent to the five or six found necessary if the drug is swallowed.

The mode of action of ergotamine is at present unexplained. It has proved useless for the relief of headaches due to conditions other than migraine and has no analgesic properties. Originally employed on the hypothesis that it inhibited the nerve-endings of the sympathetic it has been shown by P SOLOMON[2] to be without effect on the psycho galvanic reflex, which is an index of sympathetic activity and to relieve the headache without influencing the sympathetic nervous system as a whole. Dr O SULLIVAN believes that the action of the alkaloid is dependent on the humoral state of the organism and is intimately connected with the complex mechanism of the still unexplainable migraine seizure'. Medical sufferers from migraine who are acquainted with the work of G W PICKERING and others on the production of headache with histamine can hardly have failed to be struck by the resemblance between the brief headache induced by the intravenous injection of histamine and the migrainous headache. Histamine headache has recently been further studied by CLARK HOUGH and WOLFF[3] who have confirmed the observations of PICKERING and HESS, and support their inference that this type of headache is due to dilatation and stretch of the pial and dural arteries and their surrounding tissues. In migraine as in the histamine headache dilatation and increased pulsation of the temporal arteries occurs and it seems reasonable to infer that the state of the intracranial arteries is similar in the two conditions. It is possible that ergotamine acts by restoring tone to the stretched smooth muscle of the intracranial arteries and observations on the effect of ergotamine on the histamine headache would be valuable. Ergotamine though of outstanding value as a palliative does not cure migraine but the elucidation of its mode of action might bring us nearer to the understanding of the nature of the disorder. The suffering social inconvenience and economic loss occasioned by migraine must in the aggregate be enormous. A patient with the disorder in a severe form is subject at frequent intervals for the greater part of a lifetime to pain discomfort, and incapacity as severe as those experienced by many patients with an intracranial tumour. Denied even the colloidal equilibrium which affects the acid base balance of the blood If a condition of acidosis is produced by such disturbance, the end result so far as the teeth are concerned is dental caries, on the other hand, a state of alkalosis is thought to lead to pyorrhoea Dr Broderick has now linked up his work with the views expressed by Dr J R McDonagh and appears to accept completely the latter's concept of disease In treatment a variety of methods is recommended in which dentistry as usually understood plays little part Alkalis such as sodium bicarbonate are used with a view to the prevention of caries and derivatives of cholin and ergot in cases of rampant caries Dr Broderick advocates the administration of small doses of insulin to children with extensive caries on the assumption that caries s due to a dehydration of the colloid particles and that insulin will bring about hydration For pyorrhoea he recommends ammonium chloride, thyroid extract, and colonic lavage, and follows up this treatment by subcutaneous injections of various kinds There seems to be little scope for the ordinary methods of dentistry in his concepts of dental disease The illustrative cases recorded seem to have shown considerable improvement while under treatment along the lines suggested

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[1] J Amer med Ass 1936 107 1 08

[2] Arch Neurol Psychiat Chicago 1936 35 963

[3] Ibid p 10[illegible]

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J Amer med Ass 1936 107 1208

Arch Neurol Psychiat Chicago 1936 35 963

Ibid p 1052

dignity of a bad prognosis he, or more often she, is likely to exhaust the sympathy of friends and relatives and to feel a recurrent nuisance—no more use, in fact, during the attack than a sick headache To be able to offer such unfortunates a reliable palliative is much, but it is to be hoped that the need for systematic investigation of the ætiology of migraine will not be overlooked

NEW LIGHT ON THE LIFE CYCLE OF THE MALARIA PARASITE

It has long been a source of interest to the biologist and of chagrin to the clinician that the malaria parasite, when banished from the blood stream by quinine, is able somewhere to maintain its existence That the parasiticidal effect of quinine has been at the same time so complete and yet so futile is one of the notable mysteries of clinical medicine If it is true that the sporozoites injected by the mosquito complete their life cycle in the cells of the circulating blood, then the infection should be scotched by the ingestion of quinine sufficient to maintain a lethal concentration in the blood stream And yet a patient who has taken a gramme of quinine daily before and during infection by mosquito bites, and for every day throughout the incubation period, develops an attack of malaria precisely as if no drug had been given The life history of the parasite in the vertebral host cannot then be as obvious as all that, for, though **Schaudinn** described the penetration of sporozoites into red blood corpuscles, no one it seems has succeeded in repeating his observations

Some years ago Lieut Colonel S P **James** made the suggestion[1] that the sporozoites, when they are injected by the mosquito, may be carried to reticulo endothelial cells of the lungs and other organs in which they complete their asexual cycle of growth and sporulation—a process already observed in the bird parasite, halteridium Colonel **James** has now confirmed this suggestion for a malaria parasite itself—not in man, but in the domestic fowl At a laboratory meeting of the Royal Society of Tropical Medicine and Hygiene on March 18th he demonstrated the life-history of the *Plasmodium gallinaceum* as worked out by Mr P **Tate**, Ph D, and himself at the Molteno Institute in Cambridge Using this avian strain, brought from Ceylon by Prof **Brumpt** of Paris, **James** and **Tate** have witnessed a cycle of development occurring, not in red blood cells, but in the reticulo-endothelial cells of the spleen, liver, kidneys, and particularly the endothelial cells lining the capillaries of the brain In chickens which had died of a malarial attack, despite the destruction by quinine of all the parasites in the peripheral blood, they found the capillaries of the brain blocked with masses of schizonts, the result being death from paralysis and coma Those who were able to study the slides submitted at the laboratory meeting were left in no doubt that in avian malaria there is a schizogenous cycle of development occurring in reticulo-endothelial cells Parallel observations have been made for the blood-forming cells by two Chicago workers[2] and for the reticulo-endothelial cells by **Raffaele**[3] in Rome **James** and **Tate** have observed the entry of the parasite into blood-forming cells, and every stage in their growth and multiplication until the merozoites burst the cell and are ready to enter other endothelial cells and red blood cells, to begin the cycle anew

But while this is true of certain avian parasites it may not apply to those of man, although there is some justification for thinking that it may, if, as we believe, it is a fact that the three fundamental discoveries in malaria—associated with the names of **Ross**, **McCallum**, and **Roehl**—were made first in birds and only afterwards in man If the analogy should prove true, the discovery affords no short cut to treatment But any light shed on the life history of malaria parasites should indicate the direction in which successful treatment lies, for a drug which circulates only in the blood stream cannot effectively attack extra hæmic parasites In the meantime the biologist may have to revise the classification of plasmodia in view of their affinity for tissue cells

SILICOSIS IN THE RAND GOLD MINES

Since the inception in 1916 of the Miners' Phthisis Medical Bureau[4] of the Union of South Africa elaborate records have been kept of the incidence of silicosis and tuberculosis on the Rand, and of the fate of those afflicted, in so far as they could be traced The report, signed by Dr L G **Irvine** the chairman of the Bureau, on the three years ended July 31st, 1935, recently issued, contains, like its predecessors, a summary of the more important data for the whole period It is thus possible to get an idea of the trends in the character and incidence of silicosis in the mining population of the Rand and to form an estimate of the value of this great medical organisation in its twofold function (1) to award certificates which enable those who have contracted the disease to get compensation, and (2) to help in its control and prevention. The legislation which led up to the establishment of the Bureau is set out on p 773 with some account of the corresponding developments in this country Inasmuch as there is clearly a need for the extension of these, it is from every point of view worth investigating the results achieved in South Africa, where the preventive measures and the rigid supervision of the Rand miners seem to have been to some extent effective in combating the disease The improvement in working conditions on the Rand in recent years is shown by the great increase in the average period of service underground before the incidence of the disease The mean duration of the previous underground service in all new cases of silicosis among miners who have worked only in scheduled mines was 9¼ years in 1919–20, and as much as 16¾ in 1934–35 the commonest duration being 18 years and the longest 28 years It must be understood, of course that these data refer only to the previous service of men who actually contract silicosis and take no account of the services of the great majority whose lungs were not and may never be affected It should be noted too that a diagnosis of silicosis is recorded when the earliest definite signs are detected at the periodical examinations submission to which is a condition of employment The number of cases of silicosis which have arisen since 1919 when the Act was passed defining three stages of silicosis has been affected in the main by two factors whose influence has been conflicting a decided and progressive decline in the liability to contract silicosis and on the other hand an increase in the number of miners who have worked continuously for long periods in the mines As a result of the predominating effect of the second factor, the actual number of new cases of silicosis has increased during the year 1934–35 after an uninterrupted fall from 364 in 1926–27 when 13 525 miners were examined to 180 in 1933–34 when 19,731 miners were examined In 1934–35 the new cases numbered 193 amongst 21 812 The increase (of 13 cases) is attributed to a substantial increase in the number of miners with over 18 years service and a slightly higher incidence of silicosis amongst them It is satisfactory to learn that in all the new cases the disease was in the earliest stage

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[1] Proc R Acad Med, Amst 1931 34 1424

[2] Huff C G and Bloom W (1935) *J Infect Dis* 57 315

[3] Raffaele G (1936) *Riv Malariol* 15 309 318

[4] Report upon the work of the Miners Phthisis Medical Bureau for the three years ended July 31st 1935 Pretoria Government Printer 1936

Tuberculosis is classified for the purposes of the Bureau as occurring with silicosis and alone Patients with either form are eligible for compensation and are excluded from further work in scheduled mines as soon as their disease is detected while patients with simple silicosis are allowed to continue at work During the three years under review, 7 cases of tuberculosis with silicosis were detected in white men, of these 5 had previously been notified as having silicosis The production rates " (incidence rates) over the period averaged 0·115 per 1000 Tuberculosis alone was detected during the three years in 81 cases, giving prevalence rates for each year of 1 79 1 10 and 1 18 per 1000 respectively The experience of the Bureau has shown that a considerable proportion of cases which at the outset manifest the clinical and radiological signs only of tuberculosis later on present evidence of the development of an element of silicotic fibrosis also For purposes of compensation these cases are immediately transferred to the class of tuberculosis with silicosis' The native labourers numbering during 1934–35 255,816 also undergo initial and periodical examinations, and a final examination on the termination of their underground employment These examinations are carried out by 42 whole time medical officers from the medical staff of the mines and of the central hospital of the Witwatersrand Native Labour Association. Their task is onerous inasmuch as nearly 90 per cent. of this native labour force is replaced each year Amongst this shifting population the prevalence rates for tuberculosis have shown a lower trend since 1928, the combined rates for tuberculosis and tuberculosis with silicosis reached the lowest recorded figure in 1934–35 (for all forms of silicosis 1 97, and for all forms of tuberculosis, 3 23 per 1000) being less by at least 40 per cent than it was ten years ago. The great preponderance of cases of active tuberculosis amongst the compensatable diseases leads Dr IRVINE to emphasise once more the cardinal importance of directing all possible effort to the elimination of cases of communicable tuberculosis amongst native mine-workers and of bringing under control all occupational and other conditions which can be shown to foster the incidence of that infection amongst them.

In view of this encouraging evidence, can it be said that the production of silicosis has been arrested in the mines on the Rand? Unfortunately not, amongst the white 'new Rand miners' (that is, those recruited since 1916 and subjected to an initial examination, periodically repeated throughout the whole period of service) who have been more or less continuously at work for periods of 16 to 18 years it is stated that "the incidence of silicosis has become significant" The Bureau suggests that since in respect of these men the medical prophylactic measures may be presumed to have done their best, any further improvement will have to come from the technical side of dust prevention. It is fortunate that at this stage the help is available of an expert physicist, appointed by the Transvaal Chamber of Mines who are undertaking a thorough reinvestigation of the problem of dust production in the mining processes By means of the thermal precipitator instrument developed under the auspices of the Medical Research Council[4] a more complete understanding of the problem of dust production will be gained and this should lead, in turn to the development of an efficient system of dust suppression. The value of the records and experience of an established organisation such as this Bureau in assessing the effect of new technical measures is inestimable and Dr IRVINE and his colleagues can be assured that their work is appreciated not only in the Transvaal but throughout the world wherever silicosis is a problem.

AT a meeting of the Royal College of Physicians of London held on March 22nd Lord Dawson was re-elected President.

Mr H. L Eason vice-chancellor of the University of London and medical superintendent of Guy's Hospital has been appointed principal of the university from July 1st 1937 to Sept 30th 1941 in succession to the late Sir Edwin Deller

IN a recent report of the annual dinner of the Royal London Ophthalmic (Moorfields) Hospital an allusion to the resignation of Dr Russell Brain from the staff of the hospital might from its wording imply that he had retired from the medical profession. This all will be glad to know is not the case

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[4] Physical Methods for the Estimation of the Dust Hazard in Industry By H L Green and H H Watson *Spec Rep Ser med Res Coun. Lond* No 199 London. 1935

ANNOTATIONS

AN ADVISORY FACTORIES COUNCIL

MOST practitioners have suffered from apparently arbitrary decisions given by State Departments upon matters in which the decision of a minister of the crown is final The Ministry of Health in its relationships to insurance practitioners is one case in point, another is the relation of the Ministry of Pensions to ex Army pensioners and their claims The decisions given may be right or they may be wrong, in either case a feeling is left that impartial justice has not been administered In industry we hear criticisms of the method by which certain regulations have been made and administered, new industrial processes, it is said have been stifled by the exacting nature of certain regulations These criticisms may be—and often obviously are—unfounded But is there not a way out? There are nowadays statutory advisory councils and advisory committees for almost every conceivable subject of legislation agriculture cinematograph films, the dye stuffs industry, forestry, housing, import duties, traffic regulation, plumage importation, poisons, shipping unemployment insurance, and so on It may usefully be recalled, too, that the report of the Committee on Ministers' Powers (a valuable State document published in 1932, of which too little notice has been taken) observed that the practice of consultation between a department and the particular interests affected by a proposed exercise of delegated law making power should be "extended so as to ensure that such consultation takes place whenever practicable" It seems to us that a strong case could be made out for an advisory council which might lessen, if it could not share, the responsibility placed upon the Secretary of State and the Home Office inspectorate under the Factories Acts and the idea has influential support[1] It remains to inquire what kind of questions such an advisory body should be competent to consider In the new Factories Bill a clear and very important distinction is drawn between regulations which can be made by the Secretary of State without formal inquiry and *special* regulations which can only be made after the issue of draft regulations (see second schedule to the Bill) The procedure proposed is for the Secretary of State to issue a draft of the regulations, stating a time during which an objection may be lodged On the receipt of an objection the Secretary of State may amend and reissue the draft If however a *general* objection is made the Secretary of State shall direct an inquiry to be held before making regulations Or, if he thinks fit he may order an inquiry in the absence of a general objection These inquiries are to be held in public by a competent person, appointed by the Minister who may hear on oath any evidence which in his opinion is relevant It will be important to understand what constitutes a general objection to a draft regulation A general objection may be made either by a majority of the occupiers of the factories affected or by any person who satisfies the Secretary of State that he represents a majority of the persons employed in those factories Furthermore if it appears to the Secretary of State that by reason of special conditions any of the requirements of the draft regulations may be unnecessary or inappropriate to any class or description of factory The Secretary of State may accept a general objection from employees or employed, as in the previous instance It seems to us that under certain easily conceivable circumstances the Secretary of State might prove to be difficult to satisfy The main functions of an advisory board might be (1) to advise him concerning the (ordinary) regulations which he alone is competent to make, e g, the setting up of standards of adequate ventilation, lighting, &c, and the interpretation which inspectors should place upon the necessarily vague definitions contained in the Bill, and (2) to advise him whether or not a general objection to any of his draft regulations has in fact been made out Whatever else an advisory council might do, it would certainly be useful in these two capacities

RHEUMATIC NODULES, SPONTANEOUS AND INDUCED

THE suspicion that since rheumatic nodules tend to occur over pressure points trauma may be a factor in their production is strengthened by some experiments recently carried out by Massell, Mote, and Duckett Jones[1] A series of patients were given injections of 2–3 c cm of their own blood in the subcutaneous tissue of the olecranon region, and for the succeeding ten days the injected elbow was rubbed against the bedclothes for several minutes six times a day In every case a hæmatoma and a diffuse thickening of the subcutaneous tissue were produced which lasted ten days, and then gradually disappeared, some left no trace, others became the site of discrete painless subcutaneous nodules which were indistinguishable clinically from rheumatic nodules Of a group of 20 patients with clinical rheumatic fever, 18 developed induced nodules, 13 out of 26 patients in whom active rheumatism was suspected on laboratory evidence but who showed no clinical signs developed nodules, as did only a few (14 per cent) of a group of choreics and patients with inactive rheumatism Only 1 of a control group of 34 patients of the same age period showed a nodule response, and in this case there was a possibility of the patient having suffered from rheumatic fever Further investigations were made into the nature of the trauma required to produce nodules In active rheumatism neither friction alone nor friction with the injection of novocain had any effect, although nodules appeared in the opposite arm, which received blood also In a small group of cases the injection of saline produced nodules almost as often as did the patients' own blood The authors make no mention of the incidence of spontaneous nodules in the cases under observation, nor, apparently, did they investigate the effect of injecting blood from a non rheumatic patient, if this device were successful it would look as if rheumatic nodules are merely the result of injury in an unusually labile connective tissue, and make less likely the possibility that the nodule is an "allergic response" to the injection of the patients own blood

In another accompanying paper the same authors[2] describe the histology of a number of nodules of varying ages both spontaneous and induced They had the foresight to remove these under nerve block anæsthesia, thus avoiding the tissue distortion which invariably follows local anæsthesia The changes in the natural rheumatic nodule are similar to those described by L Gross and J C Elwlich[3] in the rheumatic myocardium. The fibrous tissue swells and becomes markedly eosinophilic and about the same time there is an infiltration of polymorphonuclear leucocytes and proliferation of perivascular mesenchymal cells, although multinucleate cells of Aschoff-Coombs type are uncommon the vessels show endothelial proliferation and occasionally medial vacuolation. In the later stages there is organisation around the necrotic area with revascularisation and increasing fibrosis The artificial nodules showed a similar morphology but the area of damage was more extensive and much phagocytosis of the blood pigments obscured the picture The histology of the saline-induced nodule is not described Although these observations are of considerable interest there seems little hope of applying them to the practical problem of determining by a simple means whether or not rheumatism is still active

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[1] *Brit med J* March 13th p [illegible]

[1] *J clin Invest* 1937 16 125
[2] *Ibid* p 129

EVERGREEN PEOPLE

The case of a patient contributed by Prof Lawford Knaggs to this issue (see p 745) is a remarkable story from several points of view It is an account of a very uncommon condition it is completed by observations over more than 24 years it is told by a surgeon who has retired from active operating for many years but who has nevertheless retained a keen interest in the study of disease; it adds to our knowledge Infectious non-suppurative encephalitis of this kind must be extremely rare and such complete recovery one would imagine to be rarer still. It is truly remarkable that the brain could bulge through a subtemporal opening on the left side of the skull for as much as 1 in above the surface and yet that there should be so little pressure upon Broca s area that the child could converse intelligently six days after the operation.

Surgeons are often reproached for not knowing the remote results of their operations more accurately Only those who have attempted to learn the histories of urban patients who have been operated upon some years before know how discouraging is the meagre response Some have moved to other districts none knows where others are dead and no information about the particular disease in question is forthcoming, others again fail to reply because they are care free and grudge the trouble The recognition of these things led to the foundation of the Mackenzie Institute in St Andrews What is certainly true is that clinical records would be made much more complete and often extremely valuable if more retired doctors retained sufficient interest in medicine to be curious about their one time patients Many of them have lived long enough for their records to have exceptional value But there are few men so remarkable in this respect as Prof Knaggs who since his retirement has published one of the most authoritative descriptive works on diseases of bone that we possess He belongs to that small band of men who retain their creative mental faculties as long as life lasts Sir Charles Ballance was another recent conspicuous instance Prof Knaggs is following great examples Metchnikoff did some of his greatest work after he was sixty Michael Angelo died in the height of his fame and ability at eighty nine and two years ago a former professor at the Slade School had his self portrait bought for the nation when he had passed his eightieth year Other instances will occur to many minds at once Difficult as it is to believe, it is true that the mental, inventive and artistically emotional faculties although they may not be capable of such sustained activity, may remain at their peak until very advanced life

THE ELECTROPHYSIOLOGY OF THE CORTEX

A monograph by Dr A E Kornmüller[1]—the first to appear on the electrophysiology of the cortex—is the complement to the classical histological researches of Oskar Vogt and his collaborators on the cyto architectonics of the cerebral hemispheres This fact gives it a special value and also exposes it to certain criticisms Vogt has devoted his life to producing evidence that the cortex of man and animals is divided into a score or more of well-defined ' fields distinguishable by their histological character and mostly also by the effects of stimulating them The greater part of this book consists of an attempt to show that in the rabbit and the ape these various fields are characterised also by their specific electrical discharges (Eigenströme) during comparative rest and by their electrical response to sensory stimulation.

Although the detail of Vogt s claims may still be a subject for controversy no one supposes that all parts of the cortex exhibit an identical structure, and it is certainly important to ascertain whether there is a variation in electrical properties corresponding with the undoubted histological differences The records now reproduced in this book purport to supply the evidence upon which the verdict must be based Technically they are excellent they were obtained by means of some of the most elegant machinery which has ever been used for the study of a biological problem specially designed and built by Tönnies for this work. Their interpretation however is a matter upon which opinions will differ In the main Dr Kornmüller is probably correct in asserting that the various parts of the cortex produce electrical discharges of different types but the records here submitted suggest as much variation in any one area from time to time as between different areas and this is disappointing to those who were quite willing to be convinced. Moreover it is tempting to wonder whether this preoccupation with local differences is at all likely to throw fresh light on the problem of the origin and significance of the electrical phenomena themselves notably on those observed in man which are only briefly mentioned.

There is nevertheless much valuable matter in this monograph, perhaps the most interesting to medical men being the study of the electrical discharges observed in the rabbit s cortex during the exhibition of convulsant drugs such as strychnine and mescaline. The convulsion waves produced by the local application of such drugs do not seem to spread far from the site of application and their character depends to some extent upon the area concerned less upon the nature of the convulsant Areas distant from that to which the drug is applied usually show a diminution of the specific resting discharge though Gozzano has shown that the symmetrical point in the opposite hemisphere may discharge synchronously with the abnormally stimulated point unless the corpus callosum is divided. The relation of the electrophysiological data to general theories of central nervous function is discussed perhaps prematurely It is difficult for example, to see what direct bearing Dr Kornmüller s hypothesis of specific electrical activity has on the question of whether the central nervous system acts "as a whole" or not, if indeed this is a pertinent question. The amplifier in neurophysiology has proved to be something of a Pandora's box; it has certainly released a number of awkward problems, but these are likely to be solved sooner by patient experimentation than by attempts to fit them into preconceived theories.

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[3] Amer J Path 1934 10 40 480

[1] Die Bioelektrischen Erscheinungen der Hirnrindenfelder Dr A E Kornmüller, Kaiser Wilhelm Institut für Hirnforschung Berlin Buch. Leipzig: Georg Thieme 1937 Pp 118 RM 7 80

SUPPURATIVE TENOSYNOVITIS

THE treatment of tendon sheath infections of the hand is notoriously unsatisfactory and good results are uncommon. Dr. Robert Grinnell has reported[1] a detailed study of 125 cases of suppurative tenosynovitis that have been followed up for an average period of 16 months, thus making it possible to correlate the functional result with the method of treatment and with the various other factors. This contribution is the more important because definite facts about the results of suppurative tenosynovitis are hard to find, but if the treatment of this crippling condition is to be improved these must be studied. One of the defects of Kanavel's admirable book is the scanty information on this point. Nearly half Grinnell's cases were due to wounds at the finger flexion creases—chiefly at the distal crease. The most important of the other causes was infection of the distal closed space, which was the site of primary infection in 18 per cent. of the patients, thus proving the necessity for prompt and careful treatment of this very common type of whitlow.

The diagnosis of an uncomplicated case of tenosynovitis is fairly easy, but it is often very difficult to know when an infection elsewhere in the finger has invaded the tendon sheath. This is well illustrated in the series for the correct diagnosis was made in nearly 90 per cent. of the primary cases, but in only about 60 per cent. of the secondary cases. Though in 12 patients uninfected portions of a tendon sheath were opened owing to a wrong diagnosis, in 11 no apparent ill effects ensued. Grinnell considers that when reasonable suspicion of tenosynovitis is present it is far better to incise than to delay. A neglected sheath will give much greater disability than one opened unnecessarily. Generally the sheath was drained by the usual antero-lateral incision, the flexion creases being avoided. In a few cases, however, to provide freer drainage he used Auchincloss's method of exposing the sheath by dissecting up from in front of it a flap of skin and subcutaneous tissue with its base proximal, and the results were encouraging. Post-operative treatment is not described at any length, but it appears that the application of sterile dressings periodically moistened but not removed has better results than "hand soaks," by giving less opportunity for secondary infection to develop. Nothing is said about the stage at which passive and active movements were started.

Perhaps the most valuable data in the paper refer to the functional results, judged mainly by the mobility of the finger joints. There was no movement at the interphalangeal joints and little at the metacarpophalangeal in 35 per cent. of the cases; only 17 per cent. showed an almost complete return to normal function. The best results were obtained in the thumb—except when the ulnar bursa was secondarily involved, and the worst in the little finger. This is explained by the fact that the thumb has only one long tendon to become adherent, one less joint to become stiff, and many more small muscles to take over the functions of the long tendon. The little finger has in addition the great handicap that its sheath communicates with the ulnar bursa. It is noted that whereas spread of infection from radial to ulnar bursa was not uncommon, there was only one case of spread in the reverse direction. This has been reported by other observers and is difficult to explain. Grinnell attributes the poor results chiefly to late operation. The average duration of tenosynovitis before operation was 6.2 days, and the time factor was shown to be particularly important in the causation of tendon necrosis which occurred in more than half the cases. But even when the best treatment is given promptly results are often bad. "The last word," he concludes, "has obviously not been said as to the best type of incision, the best method of drainage, and the best post-operative treatment."

VOLUNTARY HOSPITAL FINANCE

ALTHOUGH the paper contributed by Mr. C. E. A. Bedwell, house governor of King's College Hospital, to the Medico-Legal Society early this year was primarily concerned with the legal status of voluntary hospitals, the full text, now available in the current issue of the *Medico-Legal and Criminological Review*, shows that it also provided material in relation to their financial position. In particular Mr. Bedwell directed attention to the analogy between the Local Government Act, 1929, and the Education Act, 1902. Under the latter many voluntary schools have ceased to exist and the system of education has gradually become more uniform in character. Moreover, directly the local authorities provided schools on any considerable scale the cost of education steadily increased and the difficulties of the voluntary schools grew in the same proportion. Exactly the same situation is confronting the voluntary hospitals. For the present, according to figures given by Sir Charles Harris in the *Times* of March 12th, the income of the voluntary hospitals is continuing to expand though that admittedly is not the same thing as keeping pace with the requirements of the population. The figures do not show to what extent additional income is being actually received from payments by local authorities. Sir Charles Harris advocates some form of rationalisation by which the voluntary hospitals "should abandon the traditional isolation of each unit in favour of progressive and well-organised team work." He looks to Lord Sankey's Commission to provide some solution of the problem while he cannot accept the suggestion of a previous correspondent of the *Times* that assistance might be given through a national committee instead of allowing the voluntary hospitals to be subjected to the pressure of local competition with its inevitable result. Even in London where the considerable resources of King Edward's Hospital Fund are available no special attempt has been made to maintain the voluntary system in an area of South London where it was practically non-existent until King's College Hospital was moved there in 1913. In spite of strenuous struggles it has remained incomplete, although additions have recently been made, so that the need for beds in that area became an issue in the recent election of the London County Council. Accordingly an L.C.C. institution within a short distance of K.C.H. has been developed into a hospital and another hospital is being built at Tooting. Thus the delay of the voluntary hospital authorities to pursue a united and considered policy is providing the opportunity for the local authorities to put their plans into operation The same thing is taking place all over the country, as can be seen by any diligent reader of the *Public Assistance Journal* which frequently publishes articles surveying their developments Sir Charles Harris deplores that an awakening did not take place more promptly on the passing of the Act of 1929 but even now the friends of voluntary hospitals do not seem to realise all that is happening around them.

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[1] Ann. Surg. January, 1937, p. 97.

SOCIAL CONDITIONS IN SOUTH WALES

FEW efforts have ever been made to collect and set forth in detail the social state of any country or district. Yet again and again historians are searching for such records of the past whence to obtain both the setting and explanation of the deeds of which they tell. An industrial survey of South Wales in three stout volumes[1] crowded with information concerning the life of the people on that great coal field, now in a state of depression, provides the sort of document which will be a permanent source of reference. As the story is told of how overseas trade has been hampered by international quotas subsidies and devaluations the interdependence of every part of the civilised world upon every other is brought forcibly to attention South Wales is profoundly affected by what is happening in France Germany Italy Japan or Polish Upper Silesia Import duties have injuriously affected the export of coal and a general resumption of foreign lending and a large measure of international free trade are needed to restore the coal exports of South Wales Even so mining still stands out first among the occupations accounting for 37 per cent of the workers—but it claimed over 50 per cent. in 1923 it employed 218 835 persons in 1924 but only 129 889 in 1934. The tinplate trade and iron and steel industries each find work for 5 per cent. and the distributive trades for some 12 per cent. Other important industries are few The district is geographically unique with a series of deep narrow valleys running parallel from the lowlands bordering upon the Severn sea in a northerly direction up into the mountains Each valley is cut off from its neighbours by intervening hills and is self contained. Each has come to be thickly populated by a mining community entirely dependent upon the collieries for its existence Communications are by road and rail down the valleys towards the sea upon which the coal is carried across the world. Such mining communities do not take readily to new forms of industry Yet necessity is a hard master; and an example may be sought from what occurred in the black country that great triangle bounded by Birmingham Wolverhampton Dudley and Stourbridge in the seventies and eighties of last century Then the great 30 foot seam of South Staffordshire coal was being worked out and the iron ore of the district was being exhausted The district left desolate but densely populated, with little work and worse prospects than to day face South Wales seemed doomed. Unfortunately no industrial survey was then made to enable the progress to be traced by which that black country far from the seaboard with no minerals and its only asset an unemployed population has become most prosperous turning out chemicals glass galvanised and enamelled ware bicycles motor-cars nails and bolts needles watches and jewellery This is a transformation at which South Wales may look and take courage For she has to her advantage still large reserves of ungot minerals and magnificent seaports over and beyond her most valuable commodity—her man power An interesting note is sounded by considering the trend of the population which, like that elsewhere in these isles promises to decline in the near future This decline in South Wales may be expected to amount to 79 000 males between ages 15 and 60 by 1943; so that the surplus of labour in the region which is placed to day at about 80 000 may be expected to have disappeared by that year without the introduction of new industries Special attention is due to the third volume of this valuable survey which points out what new activities could be advantageously developed in South Wales

NIGHT-BLINDNESS

HEMERALOPIA or night-blindness sometimes wrongly called nyctalopia, may be due to various intra-ocular diseases So called idiopathic or essential hemeralopia, which is by no means uncommon and which may be present in mild or moderate degree without the patient knowing it may, according to H Jeghers[1] be due to deficiency of vitamin A Vision in dim light depends upon the metabolism of visual purple in the retinal rod cells When the eye is exposed to bright light, the visual purple becomes exhausted but is rapidly regenerated if enough vitamin A is present in the body By various photometric means, night-blindness due to lack of vitamin A may be quantitatively measured. Thus Jeans and Lentmire found slight or moderate deficiency of vitamin A in 21 per cent. of a large group of children and in as many as 70 per cent. in other more extensive surveys Among adults both I C Park and Jeghers found similar deficiencies ranging from 10 per cent to 50 per cent. in various groups In almost every instance where they tried to do so these observers were able to bring the photometer reading to normal and cure the hemeralopia by giving vitamin A by mouth, or carotene, for two weeks or longer This association between night-blindness and lack of vitamin A is of practical importance, especially to motorists P Vignalou who in 1933 reported the case of a driver who had repeated motor accidents always at night and proved to have night-blindness, pointed out that the French laws ignore hemeralopia as a ground for refusing a driver's licence, and the same holds true for the laws of this country and the United States But not only motorists are concerned in this matter Aviators engine-drivers members of the fighting services and in our own profession radiologists who do fluoroscopies in darkened rooms, are other obvious examples of persons in whom night-blindness may be a dangerous disability The subject is certainly urgent enough to warrant the attention at least of those concerned with traffic problems

TUBERCULOSIS IN INFANCY

A SHORT but careful study of the mortality in a group of tuberculin positive infants is reported by Dr Miriam Bailey from the department of epidemiology of the Johns Hopkins University school of hygiene and public health and the department of pediatrics of the Johns Hopkins Hospital[2] 170 children of whom 72 were white and 98 coloured found to be infected with tuberculosis before reaching two years of age were kept under observation for periods ranging from one to five years In the first year after discovery of infection nearly 1 in 10 of the white children died and rather more than 1 in 5 of the coloured children In the following four years the mortality was very much lower, 3 4 per cent amongst the whites 9 6 per cent amongst the coloured, so that about 70 per cent of the total mortality experienced in the five year period occurred during the first year after infection was observed In every time interval the coloured children suffered a mortality more than twice that of the white children This higher rate appears to be attributable to their greater tendency to develop parenchymal lesions Once such involvement of the lung parenchyma has taken place there is no difference between the two races in fatality and nearly one third were dead within the first year, a figure which may be compared with the 7 per cent mortality of those who displayed no parenchymal lesion at initial X ray Clinical experience suggests that the younger the child the more unfavourable the prognosis, and this is borne out in this inquiry Children found to be infected before six months of age had a fatality rate of nearly 78 per cent within five years of the discovery of infection, those whose infection was found at 6–12 months of age had a rate of 18 per cent, and those at 12–24 months of 15 per cent Children with known intrafamilial sputum positive contacts showed a slightly higher mortality than children not known to have been exposed to infection

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[1] The Second Industrial Survey of South Wales Part I Industries. Part II: Facilities Part III Development. University Press Board, Cardiff 1937 30s for 3 volumes.

[1] New Engl J Med 1937 216, 51

[2] *Milbank Memorial Fund Quarterly* 1937 15 No. 1 pp 37–47

THE MARIE CURIE HOSPITAL

> " It was her hope and belief that the Medical Women's Federation might, as a corporate body with a large available amount of clinical material, institute some scheme of research under which individual members' work might be directed correlated and unified so as to yield more valuable results than might accrue from solitary effort "

THIS is a quotation from our report [1] of an address on cancer research given by Dr Helen Chambers to the London Association of the Medical Women's Federation on Feb 12th 1924 At the conclusion of her stimulating address the Association appointed a cancer research committee which initiated radium therapy clinics at four hospitals, in or near London, staffed by women doctors, a director of research coördinated the treatment given and followed up the results These were satisfactory from the start, but the inconvenience of having four centres as far apart as central London (2) Clapham, and Brighton, was so great that the bold decision was made in 1929 to found an ad hoc institution which is now the Marie Curie Hospital with 39 beds and the most modern X ray equipment in addition to an ample supply of radium Dr Chambers did the pathological work of the hospital until her death last year in cramped quarters and with minimal facilities And her own patient and careful examination of the material submitted no less than her unobtrusive service on the board of management and on committees, contributed much more towards the realisation of her dream of productive coördinated research than she herself ever realised It was fitting that the spacious new laboratories described in our last issue should have been named after her and that her friends should be given an opportunity to contribute towards their equipment as a memorial to her zeal and vision When Queen Mary visited the hospital on March 19th to declare the new block open Lord Dawson reminded the company of the fine results being obtained by the honorary medical staff working under Dr Elizabeth Hurdon as director of research—results which Dr Henri Coutard described later as " parmi les meilleurs du monde entier " Mlle Eve Curie by now a familiar friend at the hospital, added her tribute and her thanks for the successful development of her mother's life work on its humane as well as its scientific side Mrs Walter Runciman, chairman of the board of management, showed that nowadays there is much reason for hope and good cheer in a hospital chiefly concerned with the treatment of cancer, and it was on this optimistic note that the ceremonial part of the proceedings resolved into an informal gathering of those interested in various aspects of the hospital's work That this is of the first order is clear from the reports issued from time to time, it should soon be possible to present results over a ten year period and since efforts to secure an international acceptance of certain methods of keeping records have been successful these results will be available for comparison with the late results obtained at continental clinics We have every hope that the Marie Curie Hospital will continue to rank among the best

A CENTENARY APPEAL

THE decision to mark the Royal Medical Benevolent Fund's centenary with a special appeal has not had the success that it so clearly deserved Its purpose was to raise the Fund's annual income from £14 000 to £20 000, thus enabling the grants to distressed medical practitioners or their dependants to be substantially increased The report for 1936, given at the annual meeting on March 16th, shows that letters were sent to 44,694 members of the profession during the year, asking for new subscribers and for donations to the centenary fund, and accompanied by a historical record of the work of the Fund during the hundred years, compiled by Sir Humphry Rolleston This resulted in an addition of £3872—after costs amounting to £660 had been deducted—and 117 new subscribers The committee were not content with this and decided from past experience that the response might be bettered by a reminder, and a further 220 subscribers were enrolled from the London district This has encouraged the committee to extend this year the scope of the reminder to the rest of England, Scotland, and Wales The addition to the Fund has raised the annual income from subscriptions and donations by £510 to £12,671 A heartening feature of the appeal was the energy shown by helpers in various centres in organising social functions, which succeeded in producing over £400 On the other hand, the publicity given to the appeal was responsible for even more calls for help There were 136 new applicants which with the 220 annuitants brought the total of those who received financial aid during the year to 851, the sum given being £21 409 A request for donations at Christmas brought in £728 which allowed gifts of 30s to many of the more needy cases Though the appeal has so far been only partly successful in its original aim the response to the reminder in London encourages the hope that a further request to the rest of the country will greatly decrease the deficit Even the fact that an allowance of £40 a year to a medical man could be increased to £52 shows how important it is that the renewed efforts of the Fund's committee should be rewarded by the participation of every member of the profession Surely that is not too much to ask

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[1] *Lancet* 1924 1 389

PRINCIPLES OF MEDICAL STATISTICS

XIII—FURTHER FALLACIES AND DIFFICULTIES

Proportional Rates

It is not uncommon for some confusion to be shown over the difference between absolute and relative figures For instance, take the following figures for England and Wales in 1932

Age-group (years)	Estimated population in age-group	Number of deaths registered		Death rates per million	
		All causes	Tuberculosis (all forms)	All causes	Tuberculosis (all forms)
5–9	3 181 900	6601	774	20 5	243
10–14	3 349 100	4643	827	1386	247

From the estimated *populations* and the *numbers* of deaths registered the death rates experienced in the two age groups can be calculated At ages 5–9 the death rate from tuberculosis was 243 per million persons and at ages 10–14 it was 247 a negligible difference. *In other words the risk of dying from* tuberculosis did not vary materially in 1932 between these two age-groups Supposing however we had no means of estimating the populations exposed to risk and the sole information at our disposal consisted of the *deaths registered* from tuberculosis and from all causes In that event the only rate that it is possible to calculate is a proportional rate—i.e. the deaths from tuberculosis as a percentage of the deaths from all causes At ages 5–9 this rate is 774×100÷6601=11·7 per cent and at ages 10–14 it is 827×100÷4643=17·8 per cent The *proportional death rate* from tuberculosis is 52 per cent. higher at ages 10–14 than at ages 5–9 It is necessary to be quite clear on the meaning of this proportional rate The information it gives is that *in relation to other causes of death* mortality from tuberculosis is more frequent at ages 10–14 than at ages 5–9 This is certainly an important aspect of the figures it clearly shows that any action which reduces deaths from tuberculosis (without changing the death rate from other causes) will have more effect on the total death rate at ages 10–14 than at ages 5–9 *because more of the total deaths* are attributable to tuberculosis at the higher ages But obviously we cannot deduce from the proportional rates that the *absolute* risk of dying from tuberculosis differs in the same ratios; we have, in fact seen that the absolute risks are equal. The proportional rate is dependent upon the level of two factors—viz the deaths from tuberculosis and the deaths from all causes—which form the numerator and denominator of the ratio Differences in *either* factor will influence the ratio In the case cited the numerators (deaths from tuberculosis) are nearly equal 774 at ages 5–9 and 827 at ages 10–14 but the denominators (deaths *from all causes*) differ appreciably 6601 at 5–9 and 4643 at 10–14. The proportion of deaths due to tuberculosis at ages 10–14 is higher than the proportion at ages 5–9 not because of a rise in the incidence of tuberculosis but because there is a fall in the incidence of other causes of death While other causes of death—e g diphtheria scarlet fever measles—are declining tuberculosis remains nearly steady Relatively therefore its importance increases absolutely it is unchanged

Changes in Proportional Rates

To take another example in 1917 the deaths at age 0–1 year formed 12·9 per cent. of all the deaths registered in England and Wales whereas in 1918 the proportion was 10·5 per cent It does *not* follow that the infant mortality rate of 1918 was lower than that of 1917 in fact it was very slightly higher 97 per 1000 live births compared with 96 in 1917 The lower *proportion* in 1918 is due to the great increase in deaths *at ages over 1* as a result of the influenza pandemic The numerator of the ratio did not change appreciably (64 483 deaths under 1 in 1917 and 64,386 deaths in 1918) the denominator did change appreciably (from 498 922 deaths at all ages in 1917 to 611 861 deaths in 1918)

Similarly an absence of change in a proportional rate does not necessarily denote an absence of change in the absolute rate If in 1900 there were 5 per cent of all deaths due to cause X and in 1930 the proportion was still 5 per cent this is not incompatible with an absolute decline in the mortality due to cause X. If the death rates due to cause X and to all other causes have *both* been halved the proportion must remain the same

PROPORTIONAL DEATH RATES IN OCCUPATIONS

Correspondingly a higher proportion of deaths due to cause X amongst, say coal miners than amongst bank clerks does not necessarily denote an absolutely higher death rate from that cause amongst the former Expressing the numbers of deaths due to each various cause as *percentages of the total* number due to all causes gives a series of figures that must add up to 100 Differences between any one proportion amongst miners and bank clerks must to some extent influence all the other proportions. For instance, if the proportion of *deaths amongst miners* which is due to accidents is very much higher than the corresponding proportion amongst bank clerks it follows that other causes of deaths amongst miners must be *proportionately* decreased. The point is clear if we suppose only two causes *of death to exist* say accidents and tuberculosis Amongst populations of clerks and miners of equal size there are let us suppose, in the former 50 deaths of each kind while amongst miners there are 100 deaths from accidents and 50 deaths from tuberculosis The *actual* mortality rates from tuberculosis (to deaths divided by the number in the population) are identical for the *populations* are of equal size but proportionately the tuberculosis deaths form only one-third of the total amongst miners and one half amongst clerks. The relative excess of tuberculosis amongst clerks is not due to an absolutely greater risk of this disease but to a *lower risk from* accidents.

The cardinal rule in the interpretation of proportional rates is to pay equal attention to the numerator and to the denominator of the ratios Departure from that rule may be illustrated in one or two examples *culled from* published figures

PROPORTIONAL RATES IN HOSPITAL STATISTICS

In hospital statistics the population at risk—i.e from which the recorded cases are drawn—is usually not *known* Mortality or incidence rates cannot therefore be calculated and one falls back on proportional rates

For example cases of pernicious anæmia are expressed as a proportion of all cases of illness admitted to hospital the hospital being situated in the United States Of the 47 203 admissions of persons who were born in the United States 291, or 0 62 per cent , were cases of pernicious anæmia , of the 2814 admissions of persons who were born in England 25 were cases of pernicious anæmia or 0 89 per cent , and of the 7559 admissions of persons who were born in Russia 14 were cases of pernicious anæmia or 0 19 per cent It is impossible to accept these figures as adequate evidence of racial differences in the liability to pernicious anæmia The mortality from that disease is correlated both with age and with sex, the death rate rising with age and falling more heavily on women than on men There is no doubt that the incidence varies similarly The numerator of the proportional ratio (the number of cases of pernicious anæmia) is therefore influenced by the sex and age composition of the population from which the cases are drawn, and it is unlikely that the composition is the same in native born and immigrant populations

Equally the age and sex compositions of the populations at risk in the area may influence the admission rates for other causes of illness—i.e , the denominators of the ratios—since many causes of illness are correlated with age and sex In the absence of any knowledge of the constitution of those populations it is impossible to draw reliable conclusions from these different proportions of pernicious anæmia.

PROPORTIONAL RATES IN INFANCY

The infant mortality experienced at different stages of the first year of life was differentiated between urban and rural areas and gave the following figures —

Deaths per 1000 Live Births at Different Months of Age

—	Under 1 month	Months				Under 1 year
		1–	2–	3–	6–12	
Urban	29 67	12·06	8 73	22 77	22 14	95 37
Rural	23 77	7 44	5 18	10 98	11 29	58 66

Expressing these figures as proportions it is concluded that it is significant that while the proportion of infants succumbing in the first month after birth was 31 per cent in urban areas, it rose to 41 per cent in rural areas, which points to the lack of institutional facilities in connexion with confinements in such districts and to the difficulty often experienced of summoning skilled medical assistance in time " Clearly that conclusion does not necessarily follow from the proportions The *absolute* rate at under 1 month is *lower* in the rural areas than in the urban areas (23 77 to 29 67)—though possibly it might be lower still given better institutional facilities But it will remain *proportionately* higher just as long as the urban environment shows a relatively excessive death rate at ages 1–12 months If 69 per cent of the deaths are at ages 1–12 months in the urban areas and only 59 per cent in the rural areas, then whatever the absolute rates at age 0–1 month the proportions *must* be 31 in the urban and 41 in the rural areas at that age—i e , a *relatively* unfavourable state of affairs in the rural areas Given the best possible institutional facilities that state of affairs will prevail so long as the urban areas show higher rates during the remainder of the first year

From the absolute rates in fact two arguments may be advanced The smaller advantage in the rural areas at 0–1 month compared with later ages may be the result of inferior institutional facilities there, or it may be due to the fact that the urban environment does not exert its maximum unfavourable effects until after the age of one month

STATISTICS OF POST MORTEMS

Attention has been paid in recent years to the question as to whether cancer of the lung has increased The recorded mortality statistics have been regarded as unsatisfactory evidence, for the rise apparent in those figures may be due to more accurate certification of death now than in the past The number of post mortems at which this form of malignant disease is found is held to be a more certain and less changeable basis This number can be taken as the numerator of the rate But in the absence of a knowledge of the population from which the hospital draws its inmates, an incidence rate cannot be calculated In its place a proportional rate is used, taking, for instance, as the denominator either the total number of post-mortems carried out, or the total of all cases of disease admitted to the hospital. Thus we have the cases of cancer of the lung observed at post-mortem as a proportion of all post-mortems or of all cases admitted. Calculating this ratio year by year shows its secular trend In interpreting this trend we have to consider possible changes both in the numerator and the denominator The numerator, cases of cancer of the lung found at post mortems, may be influenced by an increasing interest in the condition , persons in whom it is now suspected may be more frequently submitted to post mortem than in past years If the denominator were unchanged this would give an apparently rising incidence But it is equally important to inquire whether the denominator has changed—i.e , all post mortems or all cases admitted If the criteria upon which post-mortem examination or admission to hospital are based have changed with time this will also inevitably influence the trend of the ratio An addition to the denominator of cases or post mortems that would not have been present in earlier years must result in a declining ratio, even though the actual incidence rate of cancer of the lung on the population exposed to risk has not changed

For example, suppose the incidence of cancer of the lung in the unknown population is 5 cases per annum, all of which come to the hospital, and are recognised, and this number is unchanged between 1900 and 1930 If in 1900 there were 500 post mortems carried out then the proportional rate is 5 in 500 , if in 1930 a laudable attempt to determine more accurately the causes of death of patients led to an increase of the post-mortem examination to 600, the ratio falls to 5 in 600, without any change in the real incidence

It may, perhaps, be reiterated that the denominator needs just as much consideration as the numerator

The Problem of Attributes

In medical statistics subdivisions of the cases treated have often to be made in order to ensure that like is being compared with like It is obviously idle to compare the fate of two groups of patients with cancer of the cervix uteri treated by different methods, if one group contains 50 per cent of persons whose disease was far advanced when treatment was begun and the other had but 10 per cent in the same category *To avoid this fallacy an attempt is made* to classify the patients according to the stage, or severity, of the disease when first seen Such a division, it is recognised, may be influenced by the different interpretation of what constitutes degrees of severity by the observers, and such statistics must always be regarded with that difficulty in mind

For instance, one hospital classifies two thirds of its patients to stages of disease 1 and 2 and one third to stages 3 and 4; another hospital has only one-quarter of the patients at stages 1 and 2 and three-quarters at stages 3 and 4 Do patients really present themselves at those hospitals in such widely differing proportions or is the difference due to differing standards of classification? The answer to that question is unknown but in comparing the fatality rates following treatment the problem must not be disregarded It must be remembered that different standards of classification may favourably influence one hospital as compared with another at *every* stage of the disease This may be shown diagrammatically by supposing the patients are set out in a line in order of severity from mildest to most severe

Hospital A   Stage 1 | Stage 2 | Stage 3 | Stage 4
Hospital B   Stage 1 | Stage 2 | Stage 3 | Stage 4

Hospital B includes in stage 1 a proportion of patients which Hospital A relegates to stage 2 the latter hospital therefore has only the very best of the patients in stage 1 and will in consequence have a more favourable result than Hospital B at that stage In the stage 2 group Hospital A includes favourable cases which B has called stage 1 while B includes less favourable cases which A classifies to stage 3 Hospital A will again show a better result The same difference is apparent in the subsequent stages Hospital B having only the extreme cases in stage 4 and A including some which B would relegate to stage 3 At each stage Hospital A will therefore compare favourably with Hospital B, though in the total there may be no difference whatever

In any series of statistics based upon division by attributes by different observers this possible fallacy must be considered with care The difficulty occurs acutely in the assessment of malnutrition amongst school children where different observers use different criteria of determination and place a different meaning on such terms as good fair poor &c The result has led in the past to an incidence that differs unbelievably from one place to another but so far no objective measure has been devised which will satisfactorily replace the subjective assessment In the same way differing interpretations by different persons made the statistics of the blind and dumb collected at the census enumerations in the past of little value and led to the questions being abandoned Faced with such statistics the reader must always ask himself Could these classifications have been made by means of objective measurements which given equal skill in making those measurements would not vary appreciably from observer to observer? If not how far may the presence of subjective influences affect the results and in what way?

A B H

SPECIAL ARTICLES

SILICOSIS AT HOME AND ABROAD

A PLEA for the extension of legislation in this country in respect of silicosis was made in a communication to the Medico Legal Society reported in our columns on March 6th. In this connexion it is of interest to review the progress in the gold mining industry in relation to the legislation for compensation for silicosis.

History of Legislation on the Rand

Gold was proved on the Rand in 1885 and mining started there in 1886 At first the mine workings were shallow and as the rock was relatively soft, friable, and damp the amount of dust was not excessive; but by the year 1802 extensive deep level mining was being done with an increasing use of drilling machines. In 1800 100 mines were working employing 12 000 whites and 100 000 coloured persons Before the Boer War very few people suspected that the mine dust was causing any injury to health The first warning was given by the Government mining engineer of the Transvaal Mines Department in 1902 when in his report he introduced the subject of the health of the workmen and mentioned miners' phthisis for the first time He stated that of 1377 machine men employed before the Boer War 225 were known to have died between October 1800 and January 1902 The attention of the Government was arrested by these facts and in December 1902 the first Transvaal Miners Phthisis Commission was appointed by Lord Milner to inquire into the incidence of the disease commonly known as miners phthisis

Regulations were made for improving the ventilation of the mines and these were supplemented from time to time by notices In 1907 the Mining Regulations Commission was appointed to revise and suggest amendments to the Regulations and a new code was issued in 1911 In the latter year compensation for miners phthisis was introduced for the first time in the Miners Phthisis Allowances Act to provide temporary relief to necessitous cases pending more extensive legislation Payment of compensation was made by the last employers who however could recover half the amount from the Government and a part of the remainder from a previous employer In 1912 an Act was passed which laid down a financial basis on a modified insurance method The benefits were financed by two funds—the Miners Phthisis Compensation Fund and the Miners Phthisis Insurance Fund The former provided benefits for the first 2 years *from* a fund which consisted mainly of quarterly levies on the scheduled mines and a contribution from the Government to make up any deficit up to a sum of £100 000 ("Scheduled mines were those wherein the mineral dust produced by mining operations was, in the opinion of the Minister of such a nature as to cause silicosis.) The insurance fund was for cases applying for benefit after August 1st 1914. It was financed by contributions from the mines and from the miners based on wages the mines contribution varying from 2½ per cent to 5 per cent the miners contribution being 2½ per cent The main reason for requiring workers to contribute apparently, was to secure their coöperation in preventive measures An amending Act was passed in 1914 extending the provisions for compensation to mine crusher house workers as well as miners and in certain circumstances to native labourers

An important Act passed in 1016 gave effect to the recommendations of a Select Committee appointed in 1915 Miners phthisis' and *silicosis* were now regarded as synonymous terms and a central medical bureau was established for dealing with all medical questions The Act prescribed periodical medical examinations at intervals of six months of white miners employed underground and suspension from work in the mines of any person found to have tuberculosis of the lungs.

A LANDMARK

The Miners Phthisis Act of 1010 repealed all previous Acts. It abolished workers contributions to the compensation fund and introduced differential rates of levy. The amount to be levied on an employer was assessed: (1) as to 45 per cent. on the amount of earnings of underground workers, (2) as to 35 per cent. on the silicosis rate of the mine, and (3) as to 20 per cent. on the assessment for income tax. The Act defined silicosis in three stages—ante primary, primary and secondary—and tuberculosis in two categories, i.e. open, as with T.B. in the sputum, or closed, but with seriously impaired working capacity.

The Miners' Phthisis Board appointed by the Government and consisting of a chairman and from three to six members with special knowledge or experience had extensive powers and duties of control and administration. The Board determined the amount of levy, granted benefits, reviewed awards periodically, and reported annually to Parliament. The medical bureau was appointed by the Minister of Mines and paid by the Government. Their duties included the conduct, direction, or control of all medical examinations required by the Act, including initial, periodical, and post-mortem examinations. Any miner could appeal against the result of a medical examination, in which case he was examined by three members of the bureau, and their decision was final.

In 1925 a consolidating and amending Act was introduced which is the present Act. It provides a right of appeal by a miner or his dependants from a decision of the bureau to the Medical Board of Appeal, consisting of three medical practitioners with special knowledge of respiratory diseases, whose decision is final. The Miners' Phthisis Amendment Act of 1934 introduces certain important changes to the consolidating Act of 1925. It follows the lines of certain provisions in the British legislation and amongst other things it provides that, in order to have a valid claim for benefits, a miner (1) must have worked underground in "scheduled" mines for a period amounting in the aggregate to 5 years, (2) must have worked for some portion of that period subsequent to August 1st, 1908, and (3) must submit a claim for benefits within 5 years from the date on which he last worked underground. These conditions do not apply to certain workers who have been resident in South Africa since the cessation of work in "scheduled" mines, or who have not worked in any occupation (other than a "scheduled" mine) which, in the opinion of the Board, is likely to have caused silicosis or aggravated the existing silicosis.

History of Legislation in this Country

If a brief outline of the legislation for compensation for silicosis in this country be studied, it will be seen that it has much in common with South African legislation. The two countries have adapted the same principles each to its own conditions, and have borrowed something from each other in the process.

The British Committee on Compensation for Industrial Diseases, 1906, explored the possibility of extending the Act to certain diseases of the respiratory system, including pulmonary fibrosis, and although they found that fibroid phthisis was a specific and sufficiently distinguishable trade disease, they found serious difficulties in the way of recommending its addition to the Schedule. These difficulties were: (1) the disease developed slowly and it would be troublesome to apportion liability amongst employers for an affected workman who had changed his employment; (2) the diagnosis from other respiratory affections was not easy; and (3) owing to the prolonged initial stage of the disease there would be a risk of some employers discharging workmen who developed symptoms. For these reasons the committee considered that it would be the more prudent course to keep in abeyance the question of scheduling the disease under the Act of 1906, but thought that it might be possible to devise special trade insurance schemes which would get over the difficulties. In 1911 the South African Miners' Phthisis Commission, after examining these findings, came to the conclusion that the difficulties were not so great in South Africa, where the disease developed more quickly, where white labour was scarce, and where there was a single industry in a limited area. Accordingly, legislation for compensation for silicosis was introduced in South Africa in 1912, seven years before it became operative in Britain.

Meantime advances were being made in diagnosis, and in 1917, in view of the continued occurrence of numerous cases of the disease in ganister mines, the Home Secretary decided that a special scheme of compensation should be worked out for the refractories industry, which consists of a special trade group engaged in getting and manipulating ganister and other highly siliceous materials for the manufacture of silica bricks and other articles used in the construction of furnaces. After negotiations with the employers and workers a scheme was agreed upon, and in order to give it effect the Workmen's Compensation (Silicosis) Act was passed in 1918. The Act enabled the Secretary of State to make schemes "for the payment of compensation by the employers of workmen in any specified industry or process or group of industries or processes involving exposure to silica dust" who were certified to have suffered death or total disablement from silicosis or silicosis accompanied by tuberculosis, or by reason of these diseases were suspended from employment. The Act provided for the establishment of a general compensation fund to which all employers in the industry were required to subscribe, and out of which all claims for compensation and all expenses should be paid. The liability was borne by the industry as a whole and not by individual employers; settlement of claims was by committees representative of employers and workmen, with an independent chairman; and all medical examinations were made by specially appointed medical officers.

A MEDICAL BOARD OF WHOLE-TIME OFFICERS

The Departmental Committee on Compensation for Silicosis dealing with the Refractories Industries (Silicosis) Scheme, 1919, examined the working of the scheme over the first four years during which it had been in force, and they made certain important recommendations. The medical officers appointed at the commencement of the scheme were generally the tuberculosis officers for the district in which the works were situated, with power to refer difficult cases to advisory committees or referees. (In South Africa, too, medical examinations were first carried out by a panel of local medical practitioners.) The committee recommended the establishment of a medical board of whole-time officers to make all medical examinations except certain initial examinations and to give all medical certificates under the scheme. Initial examinations were to be made of all persons entering the industry and periodical examinations of all workers at specified intervals. Persons found to be suffering from tuberculosis of the lungs were excluded from the industry. Compensation was not payable on account of tuberculosis unless it was accompanied by silicosis. (Compensation for tuberculosis alone was paid in South Africa on the ground of loss of employment resulting from suspension, through the desire of the industry to remove sources of infection from the mines.) The recommendations of the committee were adopted in August 1924 in an amendment to the Act of 1918 and a medical board of two whole-time officers with special experience of respiratory diseases was appointed following the lines of the Miners Phthisis Medical Bureau which was set up in South Africa in 1916 The Act of 1924 was replaced by Section 47 of the Workmen s Compensation Act 1925 A scheme was made in 1929 for the sandstone industry on similar lines to the Refractories Industries Scheme of 1925 providing for all medical examinations to be made and all certificates to be given by the Medical Board In addition schemes were made for the metal grinding industries in 1927 and for a large number of industries and processes classed as the Various Industries, in 1928 The machinery under these schemes was that applicable under the Workmen s Compensation Act to diseases scheduled under the Act—namely examination and certification by certifying factory surgeons The Departmental Committee on Medical Arrangements for the Diagnosis of Silicosis recommended in 1929 that all medical examinations should be made by the Medical Board and this was enacted in 1931 by a new scheme for medical arrangements which applied to existing schemes and to a new scheme for the asbestos industry To carry out the necessary work the medical board was increased to nine members

Compensation in cases where death or disablement is caused by silicosis or asbestosis or either of these diseases accompanied by tuberculosis contracted during employment is now payable in all industries where a serious risk of the disease is known to exist The number of new cases occurring year by year has increased during the last five years in spite of an improvement in the hygienic conditions of work owing to the extension of the Acts to more industries In 1930 there were 250 new disablement cases and 90 deaths in 1934 the corresponding figures were 415 and 138 These cases were spread over all the industries and processes to which the Acts apply Research is proceeding under the direction of a committee appointed by the Medical Research Council and in coöperation with industrial and scientific bodies with a view to extending the knowledge and understanding of pulmonary diseases due to the inhalation of dusts There is moreover a coordination between groups working in different parts of the Empire and in other countries towards this common end

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

THE SUMMER VACATION

Prof T K Monro gave an address last week to the students of St Mungo s College Glasgow at the close of the winter session He said that in spite of the progress made in the prevention diagnosis and treatment of disease by public health authorities and laboratory workers the general practitioner remains the first line of defence against disease and it is essential that his training should be as thorough as possible He referred to the long summer vacation of about three months during which little work is done by the students in Scotland There is a feeling that this is unnecessarily lengthy and that before long courses of clinical instruction will be organised during this period While this development seems both likely and desirable it is noteworthy that the present system of intensive clinical instruction that is carried out in the Scottish teaching hospitals throws considerable strain during the term on the clinical teachers Further these teachers have during vacation not only to take part in postgraduate courses of instruction but also to do extra work while their colleagues are on holiday

PARIS

(FROM OUR OWN CORRESPONDENT)

HOW SHOULD DOCTORS TREAT EACH OTHER?

THE perennial problem of payment for services rendered by a doctor to his colleague and family has lately been revived by an exchange of opinions on this subject in the medical press According to Article 41 of the Code de Deontologie a doctor must not charge any fee to a colleague or his dependents or to a medical student, and special terms may be allowed members of allied professions This ruling is simple enough in theory But in practice neither the doctor who gives nor he who receives free treatment seems to be very happy about it Several alternatives have recently been put forward One is that the recipient of free treatment should pay the giver an appropriate fee to be earmarked for a third party such as some charitable institution for the widows and orphans of doctors but it is doubtful if this triangular arrangement would please anyone except the widows and orphans Another suggestion is that a doctor should charge his colleague only 30–50 per cent of his ordinary fee A third way out of the difficulty would be for doctors and their families to insure themselves against the costs of treatment The doctor treating them would then be paid by the insurance society and neither he nor his patient would be out of pocket This solution seems to be quite the most satisfactory in theory and in certain parts of France it has also proved satisfactory in practice In the course of the above mentioned correspondence a well known surgeon asks for a definition of the term a doctor's family To give point to his request he tells how a patient said to him before she paid his fee ' You forget, Doctor that I am the cousin of Dr X Dr Paul Boudin whose knowledge of the ethical and legal problems of French medicine must be unique or nearly so draws attention to the change which has come over the scenes since the above mentioned Article 41 was first drafted In the interval medical examinations have become highly specialised and tedious and treatment has become prolonged and varied Would it not therefore he suggests be well if Article 41 were to be remodelled to allow of fees being reduced by 50 per cent for those who formerly would have received examination and treatment for nothing?

INTRAVENOUS ANÆSTHESIA WITH SODIUM EVIPAN

At the naval hospital of Sainte-Anne which is under the direction of Prof P Solcard encouraging observations have been made of late on sodium evipan as a general anæsthetic administered by intravenous injection Dr Perves and Dr Badelon have given an account of their experiences in 48 cases and though they admit that the ideal anæsthetic is still to be found and that there is little chance of ever finding it sodium evipan given by intravenous injection constitutes in their opinion a definite advance in this field by virtue of its many good qualities Among them may be mentioned the speed with which general anæsthesia can thus be induced, and this is by no means a point to be neglected in the preparations for the next war when surgeons and anæsthetists can well count on being rushed One of the chief objections to intravenous anæsthesia with sodium evipan is the frequency with which it induces albuminuria Although the 48 patients operated on were young and healthy, as many as 14 developed albuminuria which in 4 cases was considerable Renal disease, even if it dates far back, seems therefore to be a contra indication to the use of this anæsthetic It should not be used on a person about whose antecedents little is known It is also not suitable in private practice as the violent excitement it may sometimes provoke would give much more trouble at home than in a hospital The contraindications also include advanced age, peritonitis, intestinal obstruction, septicæmia, severe hæmorrhage, cachexia and hepatic insufficiency On the other hand sodium evipan is admirable for the anxious, the pusillanimous the bronchitic, the tuberculous, and patients requiring operations on the face, neck, and thorax

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BUDAPEST

(FROM OUR OWN CORRESPONDENT)

HUNGARIAN ANTHROPOLOGY

AT the parterre of the Vienna Natural History Museum the results of the Hungarian anthropological excavations are exhibited The exhibition was arranged by Prof Lajos Bartucz At the opening ceremony Prof Lebzelter, director of the museum, said that the Hungarian soil is particularly good for the preservation of ancient bones This is the main reason for the fact that in Hungary anthropology is very advanced, but to this must also be added the exemplary organisation of the Hungarian National Museum, which renders possible a complete control of excavations In Austria, for instance, anything discovered becomes the property of the local museum, hence the material is wholly scattered and comparative research is almost entirely lacking Prof Bartucz has organised the Hungarian findings systematically and competently and he is able to supply 2000 skeletons with certain dates The Hungarian lowland has been not only part of the route of the ancient great migrations but also a stopping place and a refuge The Hungarian grave excavations in connexion with this race investigation work has had very interesting results Discoveries in a Hungarian cave now called the Mussolini cave prove that Neanderthal man also lived in Hungary In the Early Stone Age the country was inhabited by a dolichocephalic people but even this was not an entirely pure race In the Bronze Age (2000–1000 B C) the long skull gradually became more and more brachycephalic From the Iron Age only very few skeletons and skulls are left because at this time cremation became the vogue From about 1000 B C up to the time of the Romans western influences became more and more important, Germans and Celts mingled with the aborigines, stamping the race with their characteristics From the skulls it is established that in the Hungarians the German and western racial types appeared much earlier than the marks of Turkish Tartar influences The Huns were also connected with the Magyar race but findings are very few and even these are badly dated The quality of the Hungarian soil is such that while bones are well preserved, the jewels, clothes, and arms buried with the bodies very easily decay It thus favours racial but not ethnological research Prof Lebzelter said that there is no pure Magyar race It is in fact very mixed, and characters of many peoples may be found, but these when assembled in the race have produced a specific Hungarian type, just as in water oxygen and hydrogen do not retain their original properties From the racial point of view, he concluded, the Austrians stand nearer to the Magyars than to the Germans

INFLUENZA EXPERIMENTS

The great group of buildings of the National Public Health Institute here have expanded still further, for the Rockefeller Foundation have erected an influenza research institute, under the management of Dr Richard Taylor, delegated from England by the Rockefeller Institute to Budapest, to carry on the researches similar to those in Great Britain and in the United States

Dr Taylor's task is to try to discover an adequate protective method for the countries of Central Europe, in case a great pan epidemic like that of 1918 should return The Budapest influenza research institute works with quite different methods than was the rule, in general, against this common scourge of mankind He carries out his experiments on ferrets, but in Budapest experiments with protective inoculations are being made already in human beings It is still too early to speak about the results, but of 154 Budapest nurses who were given protective serum not one has contracted influenza Dr Taylor does not attribute any special importance to this, since this year the capital has not been visited by any such severe influenza epidemic as, for instance, that in England But it is a fact that the experimental animals are certainly protected by the inoculations for three to four months Immunity then gradually diminishes, but against slight infections it is still effective for several months From this Dr Taylor concludes that it may be possible to inoculate everybody at the approach of an influenza epidemic or, later on, even before each winter, which will protect them throughout the whole season On being asked about the lethal effect of ultra violet light as suggested by Brown and Wells in America, Dr Taylor says that he is sure that quartz light is able to kill the influenza virus, but whole cities cannot be protected in this way, as they can by an inoculation campaign

THE DEATH OF PROF DOLLINGER

One of the most prominent figures of the University of Budapest died last week in his 88th year In spite of his advanced age Prof Julius Dollinger was active almost up to his death He was an indefatigable worker, and as professor of operative surgery and director of the First Surgical Clinic of the University he has left behind a gap that will not easily be filled During the late war as surgeon general he organised the field surgery and erected the first permanent surgical hospital for war invalids He wrote a manual of surgery which has also been translated into German In medical public affairs he was very active, being at various times president of the Hungarian Surgical Society, the Royal Medical Society, and the National Medical Association

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MINERS' GIFT TO BOLTON INFIRMARY—A new casualty ward has been opened at this hospital It was formerly the out patient department, and the cost of its extension and equipment has been provided by the miners welfare committee

CORRESPONDENCE

ON THE TAKING OF CHILDREN S TEMPERATURES

To the Editor of THE LANCET

SIR —Dr Paterson s letter in your last issue begins with the very reasonable statement that there are three sites at which the infant s temperature can be taken—namely the mouth the axilla (or groin) and the rectum But with the clinical observations that follow it is not easy to agree The advantage of the rectal route is that an accurate reading is obtained in one minute compared with a doubtful reading obtained after even five minutes in the axilla. I say doubtful because unless a baby is very feeble or moribund it is something of a feat to keep a thermometer closely clasped in the axilla or groin for five minutes In a lively or restless baby the resulting reading is merely room temperature, modified to an extent which is determined largely by the skill and conscientiousness of the observer—deplorably variable factors

Dr Paterson says that diarrhœa can be provoked by regularly taking the rectal temperature merely from the mechanical action of a slim thermometer Is this a clinical impression or the result of observing a series of cases and controls? My own clinical impression is that only a baby who is already giving the matter of passing a motion his favourable consideration will be affected by the insertion of a thermometer in other circumstances he will scorn so mild a stimulus Moreover in those cases where an effective stimulus is regularly given (with a soap stick or rubber catheter) the end result is rather to produce constipation than diarrhœa As to taking the mouth temperature this is usually practicable in children over three If a stub ended thermometer is used, if it is held while in position and if any warning to the child about biting it is omitted the danger of breakage is negligible or non existent

Variation in temperature is the only manifestation of disease that we can accurately measure at the infant s bedside There seems to be no good reason for introducing an element of doubt into what should be an exact method of investigation

I am Sir yours faithfully

C E DONALDSON

Dulwich Village, S.E., March 20th

ERGOTAMINE TARTRATE IN MIGRAINE

To the Editor of THE LANCET

SIR —From a year's personal experience I feel I can say that we now have a drug of outstanding value in migraine. For over twenty years I had been subject to intermittent headaches which occurred once or twice a week almost always on awakening None of the usual analgesics gave any relief and exhaustive attempts to discover a cause proved unavailing No septic foci remained errors of refraction had been corrected and no biliary or intestinal cause could be found All forms of treatment tried, including both specific and non-specific desensitisation had failed At the end of September 1935 my attention was drawn to Bellergal (Sandoz) a preparation of the total alkaloids of belladonna with ergotamine tartrate and phenobarbitone which was said to have a regulating action on the autonomic nervous system and I began by taking one tablet three times a day The results were better than any I had had during the previous three years. The headaches were less frequent and less severe, and whereas they had hitherto lasted until the evening they usually now passed off between 10 A.M and 11 A.M. Because, however many authors have considered migraine attacks to be associated with disturbance of the sympathetic nervous system (acting through the neurovascular system of the brain) and because ergotamine tartrate one of the components of bellergal inhibits the sympathetic, I was induced to think that treatment with Femergin (ergotamine tartrate) might be more specifically indicated in my case Accordingly from Oct 24th 1935 I took two tablets of femergin by mouth each evening and one tablet each morning but it proved relatively ineffective and so did Bellafoline an inhibitor of the parasympathetic which is another component of bellergal indeed I think the bellafoline aggravated the trouble.

At this point I decided to test the effect of femergin by injection. I injected 0 75 c cm (0 375 mg ergotamine tartrate) intramuscularly and rested a short while within 45 minutes the headache was greatly improved, and in 1½ hours to my astonishment it had completely disappeared. Within about a month I had repeated the femergin injection on each of the five occasions that an obstinate headache developed and every time the headache cleared up in 1¼–1½ hours. It then occurred to me that it was possible that the femergin injections might be successfully used prophylactically For this purpose my plan has been to inject 0 5 c cm (a small dose) subcutaneously at bedtime on the eve of what I think may prove to be a very busy and strenuous day, and since I have done so many months *ago I* have always been able to procure absolute immunity for at least 24 hours, no matter how worrying a time I may have had. Throughout the whole period that I have been taking ergotamine tartrate either alone or as a component of bellergal, I have never experienced any unpleasant secondary effect other than a very occasional slight malaise after a femergin injection which however readily passed off

The relative efficacy of ergotamine tartrate by mouth and by injection seems to require further investigation. My early experiences with femergin orally had proved disappointing but as this was somewhat puzzling in view of the astonishingly successful results achieved with injections I have latterly been making further trials with oral treatment and have obtained much improved results with larger doses M E O Sullivan (*J Amer med Ass* 1936 107 1208) records complete relief of migraine attacks in 31 out of 45 patients given ergotamine tartrate by mouth and although the proportion of successes (69 per cent.) is not as high as she obtained with injections (92 per cent) oral treatment is clearly worth consideration, especially when it is inconvenient to give injections Another method of administration that I have employed is the sublingual which I have not seen mentioned elsewhere, though Von Storch approaches it in his suggestion of application of the liquid to the nasal mucous membrane. In my experience sublingual administration is far superior to ingestion and is indeed second only to injection I find that two tablets administered in this way are equal to five or six orally Prof. J H Burn has shown that in the cat only 30 per cent of ingested ergotamine is absorbed a fact that supports my experience of sublingual administration and I believe that this method will ultimately supersede the oral route.

From the outset of treatment I was anxious first about the possibility of acquiring tolerance to ergotamine tartrate, and secondly about the side effects of ergot—especially the former than the latter After several months' trial I ceased to worry, but I later had the good fortune of an introduction to Prof Rothlin of Basle, well known for his exhaustive research work into imbalance of the autonomic nervous system, and the effect of various drugs (including ergot) on imbalance, so I put the question to him His reply was that the risk of habituation is negligible and he cited the case of a doctor well known to him, a sufferer from migraine, who for over eighteen months had nightly given herself an injection of 1 c cm of femergin (0 5 mg of ergotamine tartrate) without any sign of habituation or any side effects He pointed out that, of course, the ordinary case would not require either so large a dose or anything like so frequent administration, and that consequently the risk of secondary effects was very slight, and that in any case intelligent supervision and temporary cessation of treatment would completely prevent them This coincides with my own experience of over a year's more or less regular administration in which I never felt the slightest ill effect, indeed, on the contrary, for some time after an injection I have often experienced a distinct sense of well being

Except for the very small proportion of cases in which a definite cause can be discovered and removed, the cure of migraine is as far distant as ever But, for the vast majority of patients who have to make the best of their affliction, we now have a drug that will relieve an attack, abort an attack, and prevent an attack. The darkened room and the narcotic sedative are things of the past

I am, Sir, yours faithfully,
T W GORDON KELLY

Desford, Leicestershire March 5th

HORMONE TREATMENT OF UNDESCENDED TESTIS

To the Editor of THE LANCET

SIR,—Having just returned from abroad, this is the first opportunity I have had to reply to various points raised in letters commenting on my recent article in THE LANCET The points I wish to make are as follows —

1 A considerable proportion of cases of retained testis will descend spontaneously

2 Spontaneous descent occurs as development of the genitalia increases

3 Administration of gonadotropic hormones produces rapidly that increase in development which normally occurs gradually In this way descent of the retained testis may be obtained

4 Where genital development is considerable and a testis is undescended it is probable that retention is due to a mechanical cause This is the position in the majority of unilateral undescended testicles and in some bilateral cases

5 It is probable that successes with this treatment are obtained almost entirely in cases where spontaneous descent would ultimately occur

6 There is some experimental evidence that late testicular atrophy may follow the use of gonadotropic hormones The treatment has not been in use sufficiently long for this possibility to be excluded where patients are concerned

7 At present I think it is justifiable to use this method in bilateral cases with subnormal genital development

I agree with Dr Pearse Williams that the size of the genitalia varies considerably up to full puberty, but I consider that hormone therapy should only be employed where the genitalia are small in bilateral cases I should like to know more about the selection of cases employed by Drs Bishop and Hampson, their results (23 successes in 29 cases) suggest to me that they may not have excluded cases of retraction of the testis I am glad to have an opportunity of stating these points more clearly and trust that they may discourage the view held in some quarters that every case of imperfect descent of the testis is suitable for hormone therapy

I am, Sir, yours faithfully,
T W MIMPRISS

St Thomas's Hospital S E March 17th

ACCIDENT AND DIABETES MELLITUS

To the Editor of THE LANCET

SIR,—It is generally accepted that the reason why accidents cause an exacerbation of diabetes mellitus is that bruising of tissues leads to the production of a toxin which upsets the metabolism of diabetic subjects, just as they are upset by the toxins elaborated by some bacteria and viruses The object of this letter is to ask the assistance of the medical profession to answer the question whether accident can initiate diabetes mellitus in the same way as it is asserted that trauma can cause malignant disease or local tuberculosis A number of diabetic patients date the onset of their disease from an accident, but in only a small proportion of cases can previous glycosuria be excluded I should be very grateful to those who send me brief notes of patients who were free from glycosuria and the symptoms of diabetes mellitus before an accident and have developed glycosuria, with or without symptoms, following an accident however trivial. The records of the London Hospital furnish some cases but not sufficient to permit one to make a dogmatic statement

I am, Sir, yours faithfully,
O LEYTON

London Hospital E March 20th

DOCTORS' NOTEBOOKS OF LONG AGO

To the Editor of THE LANCET

SIR,—Your interesting annotation (p 702) on an old doctor's notebook tempts me to go one better Here is the first item, dated March ye 26th, 1688, in the notebook of a doctor at Cranbrook, Kent —

Mr Aston for the Itch			
A pot of oyntment lbss	0	2	6
for his arme aftar leting			
blud A Cattaplm	0	2	0
oyntment for ye itch	0	2	0
Pill Ext Rudii dr j	0	2	0
more oyntment	0	1	6
more oyntment	0	0	9
	0	10	9

Perhaps it was not "ye itch" after all or the ointment was not of the right sort since more than two pounds of it could not effect a cure

At the other end of the book the barber's side of the practice was entered Trimming was secured for a charge of from 1*s* 6*d* to 2*s* 6*d* a quarter There is no mention of the primitive urinalysis to which your annotation refers But we have here amongst our local records in the public library an interesting letter from one Abraham Heasman of Ticehurst, Sussex, who attained I fancy something more than local fame as a water doctor It is undated but on the back is a receipt for rates dated in 1729 The letter is addressed to a Mrs Bellingham who lived near Sevenoaks and it seems that Abraham was a ready rather than an accurate writer— I find by your waters you have boath of you and your son have fevers which your son hathe the jarndice with it verie much and lies in his head verie much and I think a kinde of surfit with it To spot the jaundice was not perhaps very clever but how he knew that it lay in the patient s head is difficult to surmise Nor was the water doctor any too sure for he writes "it was grate pittie you did not send a written noate of boath your conditions However treatment was duly prescribed in the simple words I have sent each of you a vomit and you be to take them boath. Detailed instructions follow— and everie time it works have 2 gallons of broath apiece radie and take it all if you can There is much more of interest in this letter which has the very wise post-script if you should have ocation to send again pray send this noate and then I shall be better knone what you have had of me

A country s doctor notebook commencing in 1688 is doubtless an unusual item Can anyone cap it with an earlier book ? There ought to be several earlier remaining

I am Sir yours faithfully

Sevenoaks Kent, March 19th GORDON WARD

HÆMORRHAGIC DISEASE OF THE NEW BORN

To the Editor of THE LANCET

SIR,—I have read with interest and profit Dr Norman B Capon s article in your issue of Feb 20th. It gives me the opportunity to mention a case that came to my care last year at the Colonial Hospital here in which bleeding came from the eyes as well as from the umbilicus

The history given by the midwife who attended the birth of the child was that blood had escaped continuously from both conjunctival sacs a few hours after birth accompanied by umbilical hæmorrhage The midwife brought the baby to hospital about 20 hours after its birth and I was called to see it 11 hours afterwards on account of the continued hæmorrhage from the eyes. The baby appeared quite healthy in every way and the history of the family was exceedingly good for both parents and several brothers and sisters I tried normal horse serum as an emergency measure and it had a beneficial effect for a short time both in its local action and by intramuscular injection. A blood transfusion was ordered but the baby died 34 hours after admission

Bleeding from the conjunctiva is not mentioned in Dr Capon s paper nor can I find any reference to it in the literature at my disposal here I have therefore written of this case because of the rarity of the source of bleeding and the fact that it was regarded as one for the ophthalmic department I understand that cases of this disease with bleeding from the rectum and genital passages are seen from time to time at the colonial hospitals in Trinidad

I am Sir yours faithfully

VIVIAN M MÉTIVIER.

Port of Spain, Trinidad B W I., March 10th

TURMERIC IN BILIARY DISEASES

To the Editor of THE LANCET

SIR,—Dr Oppenheimer in his interesting paper in your issue of March 13th refers to the use of turmeric in India for many centuries in the treatment of jaundice In The Magic Art Frazer has collected some descriptions of the methods used there They are not a bit like Dr Oppenheimer s For instance according to one technique the drug is applied externally from head to foot and three yellow birds—a parrot, a thrush, and a yellow wag tail—are tied by yellow string to the patient s bed In due course the mess of turmeric is washed off with water and the jaundice should then leave the sick man and pass to the birds The virtue of the turmeric of course rests in its curry powder yellow colour and it is interesting to note in this connexion that Dr Oppenheimer has found that the value of his preparation depends upon the yellow pigment curcumin only and not on any other constituent of the extracts from the herb

Turmeric is not the only yellow drug that has been used to treat the yellow jaundice Saffron podophyllum and dandelion are old folk medicines It is curious to see a remedy for long ages depending on the doctrine of signatures for its justification now supported by modern methods of investigation but it has happened before for the debt of therapeutics to folk medicine is considerable and your contributor s paper encourages the thought that further studies in the modern fashion of some of the old botanical remedies would be rewarded with results similar to his own I am Sir yours faithfully

Oxford March 9th EDWARD GALLOP

CHEST LEADS IN ELECTROCARDIOGRAPHY

To the Editor of THE LANCET

SIR,—All will agree with Dr Hill that a standardised method of obtaining the chest lead in clinical electrocardiography is urgently needed, To my mind there are very solid reasons for discarding the original American technique in favour of reproducing the chest lead curve in the manner advocated by Drs Willcox and Lovibond in your issue of Feb 27th, and Dr Hill s arguments do not convince me to the contrary

Two quite separate points have to be decided First the position of the electrodes on the body and secondly the manner of joining them to the galvanometer which determines the polarity Experimental direct leads purpose to record the variations in potential at a particular point on the heart and this involves the use of an exploring or dominant electrode applied directly to the heart and an indifferent electrode applied at some point distant from the heart. Though clinical chest leads are not strictly comparable with direct leads the same principle should be followed. Those who have used chest leads in clinical work will probably agree that the dominant electrode is best placed on or near the apex beat and the indifferent electrode on the right arm or left leg either of which is preferable to the back both on theoretical grounds and on grounds of expediency

The real difficulty arises over the question of polarity Drs Willcox and Lovibond advocate a reversal of the polarity employed in the original American curves so that the chest lead is as nearly as possible comparable with limb leads Anyone who has had much experience of chest leads in clinical work will readily appreciate the great convenience of reading the fourth lead *right way up* instead of upside down as necessitated by the American method

The custom in experimental work has been to so arrange the polarity in direct leads that relative negativity of the exploring electrode is represented in the finished curve as a deflection above the base line No less an authority on experimental electrocardiography than Dr F N Wilson comments on this custom as follows This practice is incon sistent with the well established conventions of coördinate geometry which demand that positive values of the variable be plotted above the time axis and negative values below it" ("Diseases of the Coronary Arteries and Cardiac Pain," New York, 1936) Again, Drs Kossmann and Johnston (*Amer Heart J* 1935, 10, 925), discussing the same subject, write as follows "the advantages of reversing the polarity of all direct, semidirect and præcordial leads are however, so great that we believe this policy will eventually be adopted by the majority"

As far as experimental curves are concerned, confusion would be avoided if all deflections were clearly designated by plus or minus signs to correspond with positivity or negativity respectively of the exploring electrode, as suggested by Wilson In clinical work I hope that British cardiologists will set an example in following the dictates of common sense, by reproducing the chest lead *right way up* in terms of accepted clinical standards They may feel fortified in so doing by the knowledge that they are also plotting positive values above the base line in accordance with scientific custom

I am, Sir, yours faithfully,
D Evan Bedford

Queen Anne-street W March 22nd

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

A NUMBER of vacancies exist for Medical Officers in the Royal Navy and applications are invited for entry in July, 1937 Candidates must not be above the age of 28 years and must be registered under the Medical Acts No examination in professional subjects will be held, but candidates will be required to attend for interview by a Selection Board Applications for entry from intending candidates must be received not later than May 31st, 1937

Mr J M Harrison, of Sevenoaks, Kent, has been appointed Admiralty Surgeon and Agent at Sevenoaks

Surg Comdrs W G C Fitzpatrick to *Pembroke* for R N B G G Newman to *Resolution*, W A Jolliffe to *Cormorant* for Gibraltar Dockyard, G Kirker to *Emerald* (on recomming) A de B Joyce to *Excellent*, J C Souter to *St Angelo* for R N Hosp, Malta S G Weldon to *Victory* for R N Hosp Haslar, R W Mussen to *Victory* for R N B, and J R Brennan to *Drake* for R N Hosp, Plymouth

Surg Lt Comdrs J J Keevil to *Victory* for R N B, J I Cusack to *Drake* for R N B, J W L Crosfill to *Drake* for R N Hosp, Plymouth, S J Savage to *Shoreham* J C Currie to *Terror II*, and for Singapore Naval Base, C D D de Labillière to *Pembroke* for R N B, M I Brosnan to *Royal Sovereign*, and E H Rampling to *Drake* for R N B and to *Resource* (on recomming)

Surg Lt Comdr (D) L V Donegan to *Pembroke* for R N B and to *Resolution*

Surg Lts W Boyd, F A Crosfill, G C Denny, R V Jones, F P Ellis, W S Miller, L R Norsworthy, B O Neill G R Rhodes, P G Stainton, T A M Maunsell, and W H C M Hamilton to R N B, Portsmouth, C P Collins to *Ganges*, G S Thoms to *Faulknor* M G H Heugh to *Pembroke* for R N B, L G Yendoll to *Coventry* C T P Pearson to *Frobisher* F H Ward to *Victory* and to *Caledonia* (on commg), and I C Macdonald to *Wellington*

Surg Rear Admiral Sir Daniel McNabb K B E, C.B, retd, had been awarded a Greenwich Hospital pension of £100 a year, in the vacancy created by the death of Inspector General of Hospitals and Fleets J H Martin, D S O, retd, on Feb 14th

ROYAL NAVAL VOLUNTEER RESERVE

Surg Lt S E Cooke to *Iron Duke*

Surg Sub Lts P H K Gray L Foster, and R F B Bennett promoted to Surg Lts

ROYAL ARMY MEDICAL CORPS

Lt C J O'Kelly resigns his short service commission.

REGULAR ARMY RESERVE OF OFFICERS

Maj Gen J S Gallie, C.B, C M G, D S O (late R A M C), Maj M P Leahy, and Capt A. W Bevis, having attained the age limit of liability to recall, cease to belong to the Res of Off

SUPPLEMENTARY RESERVE OF OFFICERS

D Thomson to be Lt

ARMY DENTAL CORPS

Short Service Commissions Lt J A O'Gorman to be Capt and W McGinnes to be Lt (on prob)

ROYAL AIR FORCE

Group Capt A E Panter to R A.F Station, Cranwell, for duty as Senior Medical Officer and Officer Commanding R.A F Hospital, Cranwell

Wing Comdr V R Smith to Headquarters, R A.F, Mediterranean, Malta, for duty as Principal Medical Officer

Flight Lts R F Wynroe to R A F Station Upper Heyford, and O S M Williams to R A F Station, Upwood

Flying Offr E B Harvey is promoted to the rank of Flight Lt

Flying Offrs E H E Cross to R A F Station, Hornchurch, and J R R Jenkins to R A F Station, Kai Tak, Hong Kong

Dental Branch—Flight Lts P M Margand to R A F Station, Gosport, and M J Pigott to R A F Depôt, Uxbridge

INDIAN MEDICAL SERVICE

Lt Col L Blake, M C, retires on account of ill health

Lt Col A J Lee retires

Indian Medical Department—Maj (Sen Asst Surg) J S Salt and Lt (Sen Asst Surg) H J C Flanagan retire

DEATHS IN THE SERVICES

Colonel Harry Arthur Leonard Howell, C M G, late R A M C, who died on Feb 26th at Lincoln in his 70th year was the son of Major R Howell of Sandgate He was educated at Manchester School and Queen's College, Cork, qualified L R C P Edin in 1892, and joined the Army in 1895, retiring in 1921 with the rank of colonel He served with the Tirah Expedition (1897–98), and on plague duty (1899–1900) when he was highly commended for his work in Bombay In the European war he was A.D M S, 1st Army, Central Force, and as officer in charge of R A.M C records he edited the "Roll of Commissioned Officers in the Medical Service of the British Army," published in 1917 at the University Press, Aberdeen He was editor of the *Gibraltar Chronicle* from 1907–10, and wrote several biographies which appeared in the *Journal* of the R A.M C In 1901 he won the Parkes memorial gold medal and prize for an essay on the prevalence and prevention of venereal diseases in the Army He was created C M G in 1919 His leisure time was devoted to historical research and to painting both in oils and water-colour In 1897 he married Adelaide, the daughter of Edmund Burke Brown J P, of Castle Park, Co Clare

Colonel Philip James Lumsden late I M.S, who died on Feb 27th at Fleet, Hants, was eldest son of John James Foote Lumsden, of Aberdeen He was educated at Aberdeen and Edinburgh, qualified M B, C M Aberd in 1886, and joined the I M S two years later At first residency surgeon in the Persian Gulf, he was later agency surgeon in Haraoti and Tonk, Kotah and Jhallawar, Quetta, and medical officer of the 44th Merwara Infantry at Ajmer From October, 1914 he was on military duty, and he retired in 1920

Colonel Ferberd Richard Buswell, C M G, late R A M C who died on March 13th at Kensington, was born at Brixton in 1864 and qualified M.R C S in 1887 taking house appointments at the Middlesex Hospital In 1893 he entered the Army as surgeon lieutenant, becoming major in 1904, and temp colonel whilst A D M S of a division in November 1915 He served in China in 1900 (medal) and during the European war when he was mentioned in dispatches and awarded the C M G in 1917

OBITUARY

ROBERT GORDON McKERRON M.D Aberd

The death occurred in Edinburgh suddenly on Sunday last of Dr Robert McKerron, emeritus professor of midwifery in the University of Aberdeen He had come to Edinburgh as was his wont to see the Calcutta Cup match, but became suddenly ill on the night previous to the match and died thirty six hours later

Robert was the eldest son of the late Rev Robert McKerron, and received his medical training at the University of Aberdeen where he graduated in arts with honours in 1884, proceeding to the medical degrees of M B C.M in 1888 He was a distinguished student in the university and early after graduation acted as assistant to the professor of physiology He became later gynæcologist at the Royal Infirmary Aberdeen and physician to the Royal Hospital for Sick Children in the city and was finally appointed regius professor of midwifery We have received the following brief obituary notice in which his high *position in the profession his success with his students* and his keen interest in sport are set out —

Not only Aberdeen and the north east of Scotland but a very large number of medical practitioners throughout the country will mourn the sudden death of Prof R G McKerron in Edinburgh on March 21st the night *previous to the international football* match at which he hoped to be present

Prof McKerron could be described as a real enthusiast in all that he did or was interested in whether it were work or play He was a keen teacher who was devoted to his students and they in their turn made of him one of the most popular of all Aberdeen professors He was an illuminating teacher of midwifery this he taught in the practical way which he considered would be of the greatest use later to the general practitioner as he always looked upon his class as potential general practitioners and not as is sometimes done at present as embryo specialists. He was an obstetrician of the old school who had little use for Cæsarean section unless it was absolutely necessary and under his care and deft manipulations this necessity seldom arose a fact that speaks adequately for his great obstetric acumen and skill. It was a pleasure and an education to see him deal with a difficult occipito posterior position or a placenta prævia

He was equally enthusiastic on games and was in his day a great cricketer In winter he followed Rugby football most keenly and rarely missed a Saturday match, no matter what kind of day it was in summer he turned his affection to the Aberdeenshire Cricket Club and was an equally enthusiastic supporter of the game He rarely missed his weekly golf match winter or summer and was a most competent bridge player No wonder that he was popular with all both young and old as he had interests in common with both *and a very large circle* of friends will miss him greatly

"Great sympathy is felt for his widow and for his three daughters and two sons one of whom is a professor of law in Johannesburg

BERNARD SCOTT M.R.C S Eng L S.A

Dr Bernard Scott whose death was announced on March 12th at the age of 78 was born in Brighton where his father was in practice as a doctor He went to Guy s Hospital at the age of 16 and qualified from that hospital in 1881 He held appointments at the Helen Bridge Hospital for Hip Diseases and at the West Sussex County Hospital Brighton and in the year 1884 went into practice in Bournemouth with his elder brother Dr T Bodley Scott In 1886 he married Lydia Margaret Whitworth of Windermere He rapidly acquired a reputation as a surgeon, and in 1892 he became honorary surgeon at the Poole road Hospital While following a very busy life as a general practitioner he found time regularly to return to Guy s in order to learn the technique of aseptic surgery which was entirely new since he had qualified and for many years he spent a fortnight of his summer holiday watching surgery at that hospital. He led an immensely active life and yet never appeared to be in a hurry and was left quite unruffled by the manifold irritations of the doctor s life He was both loved and respected by members of his own profession with whom he always worked with complete harmony

His favourite hobby was dry fly trout fishing and for many years every summer holiday was spent in this pursuit It was only last summer after he had succumbed to a severe chill whilst fishing on a bitterly cold day that he decided to give up practice altogether

He is survived by his wife and nine children two of whom have followed in his own profession while another is Elisabeth Scott, the well known architect

JOSEPH TREGELLES FOX M.R C S

Dr Tregelles Fox was born at Stoke Newington in 1855 the fifth son of *Joseph John Fox* surgeon. Like all his brothers he studied at the London Hospital under the constellation which included Hughlings Jackson Jonathan Hutchinson Andrew Clark, and Henry Gawen Sutton He had early interested himself in medical religious efforts such as Dr John Dixon s work for the Jews and Dr Pennefather's at Mildmay In 1880 he qualified M.R C S and L S.A. and went out as a medical missionary under the Friends Association to Madagascar Here he remained for seven years, working for two years single handed in a wide field including the organisation of a hospital and training selected native students His large collection of vesical calculi still exists. In 1882 he was joined by the late Dr William Wilson also a Friend who gave him much assistance in establishing a medical mission academy' and to whom he owed his life when seized with illness on one of their journeys This beginning of medical teaching in Madagascar was jointly supported by the Friends and Norwegian Missions and the London Missionary Society In 1886 Dr Fox was able to open a systematic course of medical studies and in the following year his 'Lessons in General Anatomy and Physiology Vol. I was printed in the Malagasy language at Faravohitra and became the text-book of the school It is illustrated with more than 100 reproductions of his original drawings which show his ingenious and uncommon turn of mind Ten years later when the French occupied Madagascar this academy became the Government hospital and medical school At that time 30 native students had passed through the course and qualifying examination and were doing excellent work all over the island

He returned to England in weakened health in 1887 and settled at Strathpeffer Spa where for a number of years he devoted himself to hydrological and climatic studies and the establishment of a mineral waters hospital Later, he removed for a further period to Leeds and followed his son to America practising in various parts of Oregon maintaining a strong interest in natural waters and making occasional contributions to the *Archives of Medical Hydrology*

Tregelles Fox was short of stature, an optimist by conviction, full of energy and resource, at times perhaps showing a *nimia diligentia* but never indolence, and he is still remembered by old patients with gratitude and affection He died at San Diego under the care of his son, Joseph Sanger Fox, on Jan 4th, 1937

PERCY LONSDALE McALL, M B , Ch B Edin

Dr Percy McAll, who died in Edinburgh on March 8th at the age of 66, served the London Missionary Society for 37 years in China Born in Leeds in 1870, he was educated at the Bristol Grammar School and St Olaves, Southwark From there he went to Cambridge and graduated in arts, proceeding later to Edinburgh and obtaining the degrees of M B , Ch B in 1898 He started immediately upon his missionary labours sailing the same year for China He was at first engaged on work in Wuchang and Hankow and while engaged in appointments at the hospital and medical school at Hankow, began to add the translation of medical text-books to his duties He thus made an important contribution to the training of Chinese doctors , indeed, he was largely responsible for standardising the medical vocabulary of China In 1918 he joined the staff of the medical school of Shantung Christian University at Tsinan (now known as Cheeloo), and two years later, in connexion with the translation department of the medical school, he rendered many important works on clinical pathology, bacteriology, and pathology into Chinese In 1924 a Chinese physician, Dr C L Kao, undertook the heavy task of translating the British Pharmacopœia into Chinese This work was carried on under the auspices of the British Chamber of Commerce of Shanghai, and the subsequent work of revising the translation was done under the direction of Dr McAll

Dr McAll was twice married His first wife, formerly Miss Winifred Bateman whom he married at Hankow in 1899 died at Wuchang less than two years later In 1905 he married Miss Lilian Mary Joyce a missionary who was nursing at the Hankow Hospital Dr McAll retired in 1935 and he and his wife who survives him made their home in Edinburgh Their son, Dr Kenneth McAll, is following his father's footsteps and proceeding to China as a medical missionary of the London Missionary Society

JOHN LLOYD DAVIES, M R C S Eng , L R C P Lond

Dr J Lloyd Davies whose death occurred on March 16th was a well known Newport citizen The son of the late manager of the Marshfield Iron and Tin Works he spent some time at Llanelly before entering the medical school of University College Hospital He took the English double diplomas in 1893 and was then for five years medical officer to the Dowlais Iron Company He was then appointed medical officer and public vaccinator to the Ludlow union after which he started in general practice at Newport where he soon came to hold several public appointments He took real interest in municipal affairs and was elected to the town council of Newport in 1902 He was Mayor of the borough at the outbreak of war, and met with great energy the responsibilities that fell upon him , in particular he was active in the reception of Belgian refugees, for which service he received the King Albert medal He was a J P for the county of Monmouthshire, and was elected an alderman of the borough His career of active practice was marked always by his devotion to public affairs, especially by his connexion with education He was chairman of the Newport educational committee for more than 20 years, and was the first chairman of the Newport insurance committee, having been the first doctor to be placed on the panel under the Insurance Act He represented Newport on the board of governors of University College South Wales, and for his services to his borough was made an honorary freeman He was 65 years of age at the time of his death

HENRY CHARLES ROBERTS, M B Liverp

We owe the following appreciation of the late Dr Roberts, who died on March 15th, to the personal knowledge of one of his friends and colleagues —

“The death of Henry Charles Roberts in his forty fourth year has robbed our little corner of Cheshire, and indeed Merseyside, of one whom to know was to love He qualified in 1916 and served in Mesopotamia After practising for a short time in Liverpool he came to Moreton He was a naturally gifted mechanic, and early became interested in anæsthetics He designed and made with his own hands a portable gas oxygen ether apparatus, a modification of what he thought best in the American Foregger and Heidbrink machines Latterly he had much improved this, and when the Cunard White Star liner *Queen Mary* was being equipped his apparatus was installed in her To those of us, his colleagues, who were willing to learn, he freely and generously gave of his special knowledge, and made clearly plain what others seemed to have kept a mystery, and this with undoubted financial loss to himself

“As anæsthetist to the Liverpool Dental Hospital, I believe it is true to say that he revolutionised dental anæsthetics there, and his lectures, with cinematograph films of dental anæsthesia, were becoming increasingly sought after He was skilled in all forms of his art, including evipan, avertin, ethylene, and cyclopropane, and at the time of his death was engaged on simplifying and making more economical the use of the latter He was an accomplished musician, photographer, and a keen student of nature delighting especially in his garden, and I shall always picture him coming to my poorly gardened house, his arms filled with flowers His never failing cheerfulness, generosity, and unassuming kindliness had meant so much that his unexpected death has caused real grief to his professional colleagues friends, and patients, and, among these latter the poor, who may have been said to worship him

“He leaves a widow and one son, to both of whom he was deeply devoted ”

W G McA

Hospital for Sick Children Great Ormond-street —On March 17th the Princess Royal president of this hospital, laid the foundation stone of the main block of the new hospital This is the beginning of the second part of the rebuilding scheme The first, the new nurses' home is almost completed The new block will cost £240 000 and the maximum number of cots in a ward will be 6 instead of 20 as at present Isolation glass partitioned cubicles will be attached to each ward, and oxygen will be laid on to every bed

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month his name can be seen later in the half yearly index

BY A ROVER

IV

LOOKING at the germ diseases over which we still have practically no control they are probably nearly all of them the result of infection of the body by a special type of microbe which we call a virus Filtrable viruses they are sometimes termed because the infecting agent passes through the finest filter available This infective material has been proved to contain extremely minute particles the name elementary bodies is given to them We owe the first description of these particles to a Scot named John Brown Buist, who found them in the calf lymph used for small pox vaccination and also in material removed from small pox pustules After the delay that so often follows original observations like these a number of other workers have studied these Buist bodies and have confirmed their presence and importance British bacteriologists have been amongst the foremost in these researches and in particular Dr Mervyn Gordon and Sir John Ledingham

There is a lot of evidence for regarding virus bodies as being the cause of influenza encephalitis lethargica (or sleepy sickness) infantile palsy mumps measles and also (some would add) the common cold

* * *

The first appearance of that form of inflammation of the brain called encephalitis lethargica is quite uncertain because in the severe cases of influenza cerebral symptoms have often appeared causing confusion in diagnosis But serious outbreaks have occurred in the present generation as well as many sporadic cases The number of cases in which the brain symptoms appear the fever having been overlooked or absent altogether is probably still under-estimated The same applies to influenza nerve symptoms though these are of course less serious Acute poliomyelitis better known by its trivial name infantile palsy has close affinities with encephalitis It is a very old disease There is authentic evidence that it existed in Egyptian days and it is probable that encephalitis did also

* * *

What is equally or even more important there is a growing belief that the mystery of cancer a disease which equally lacks control in the true sense of the word may find part of its solution in the discovery of specific virus bodies That cancer is a microbic disease becomes more and more a convincing hypothesis as intensive research into its problems continues It is not difficult to visualise these minute virus bodies—each one is from five to ten times smaller than the ordinary micrococci settling like so much dust inside the very substance of the cells of an organ successfully colonising there (successfully that is from their own point of view) and thoroughly disorganising the cell economy The life of the cell continues—it is not killed—but it is stimulated (irritated) into that state of chaotic overgrowth which is the very essence of cancer I do not know of any problem connected with cancer as a disease which is not capable of explanation upon the basis of a hypothesis like that We shall see if we continue to be patient and painstaking and work with some vision if this be the truth or not

It is often held that the incidence of cancer has increased during the past fifty years This is very difficult to prove Several possible fallacies come into the argument especially improved diagnosis and better methods of registration Cancer is a disease of the second half of life indeed to a large extent it is a disease of old age An increase in the number of cases of cancer may therefore be no more than a confirmation of what we know already—that the expectation of life has risen by 15 years during the past two generations Old age brings not only its own infirmities but also its own diseases Senility is itself a disease and it is on the increase If we go on as we are going a man who writes in your columns in sixty years time will probably stress senility as being one of the most striking of the new diseases

It seems to me that certain generalisations emerge from this discussion of old and new diseases There has certainly been a swing over as it were from those frequent and devastating gusts of acute and virulent germ diseases to more insidious and chronic maladies. Life was very precarious in Elizabethan days and in the centuries immediately preceding and following them We must remember that what we know to-day about those terrible scourges refers only to the big epidemics there must have been thousands of what are called sporadic cases and there were places where some of these pests made themselves endemic So that in addition to the big waves of fevers that brought death in great swathes there was the steady constant loss of life in these other ways Sydenham estimated that in his day fever accounted for 70 per cent of the whole of medical practice To-day this figure is not more than 10 per cent.

* * *

The Elizabethan was very alive to-day and very dead to morrow If we exclude influenza which still seems to possess something elemental in its potentialities—that is judging by 1918–19 rather than by the mild epidemic we have just experienced—there are no diseases nowadays that spell violence as diseases did in Sydenham's time Unless we call venturing upon the streets and roads a disease Or war; which is, after all, the greatest of all modern diseases though it is a disease of the mind and not of the body It has existed since the race began but its casualties were formerly trivial by comparison with those due to disease To-day the proportions are reversed The Great War cost us over 700 000 lives and 2¼ million total casualties At the beginning of 1920 there were just over 1 million war pensioners and even in March of 1936 there were 400 000 permanent pensions being paid Of these 40 000 were on account of mental and nervous diseases Science has reduced enormously the casualties due to the attack of the microbe upon man but science has increased in much greater proportion the casualties due to the attack of man upon man

Then again the question arises what of the integral staff of our bodies and of our minds? It looks as though our enemies have become the men of our own house, rather than those who have got entrance from without Why is this? Has something gone wrong with the control? Or, to change the metaphor, are we discharging the battery at too high, and charging it at too low, an amperage? *Why* are we becoming the preys of our own saprophytes? *Why* is the tubing of our blood vessels and why are the working parts of the pump wearing so badly? These questions cannot yet be answered

* * *

We are living longer, that is one of the most striking results of the past fifty years of hard but intelligent work on the part of those who have inspired and administered our public health services Does someone ask *cui bono?* Why live longer if we cannot live more healthy and more happily? For it certainly does look as though, for many of us, our lives become "thin spun" long before the "abhorred shears" are due—so why take such pains to prolong them? Is our meticulous care of our shadowy present worth it? Is it worth suggesting security to ourselves in a gas mask and an (alleged) bomb proof cellar? But surely the answer is with us who do the living? How *long* a man lives depends upon his ancestors and the state of the public hygiene How *healthily* and how *happily* he lives depends upon himself Also be it observed that mere absence of disease is not enough Therefore we welcome an attempt by the State to organise the national physique

And later, but I trust not too late, perhaps we might do something to organise the national mind And so get back some of the *zest* for living that we seem to have lost, and the ability to enjoy this immunity from disease that we have accumulated

*** *Next month A Taddygaddy will be responsible for these columns*—ED L

PANEL AND CONTRACT PRACTICE

Suggested Amendment of Regulations

FROM the *Bulletin* of the Glasgow burgh panel committee we learn that the Scottish Association of Insurance Committees is suggesting amendments to the medical benefit regulations in the following particulars —

1 That a medical partnership might be allowed to have a list of patients (instead of the individual partners)

2 To prohibit medical superintendents of hospitals accepting patients for treatment in the hospital under national health insurance

3 To restore to insured persons unrestricted freedom of change of doctor

4 To provide, in the case of an investigation by the medical service subcommittee, that no person shall be assisted by "counsel, solicitor, or other professional agent"

5 To confer upon insurance committees a right of entry for purpose of inspection of insurance practitioners, surgery and waiting room accommodation

6 To oppose the representations which have been made to the Department of Health for Scotland for a national capitation rate instead of an areal one

7 To make it clear that committees have the right to refuse application by a doctor to join the medical list if, in the opinion of the committee, it is not practicable —e g, on account of distance—for him to give a proper service the doctor to have the right of appeal to the department

8 To provide that, in the case of a transfer of practice, the doctors pay the whole expense of issue of notices to insured persons

9 To relieve practitioners of responsibility for treatment in a hospital of a person admitted thereto for treatment

10 To ensure that under "acceptance of fees" nothing shall preclude acceptance by a practitioner of fees under Road Traffic Act

11 To make it necessary for a practitioner to obtain the consent of the committee to his absence for more than one month

12 To give a patient who is being treated by a partner the right to require the personal services of the practitioner in whose list he is included

It seems to us unlikely that insurance practitioners will welcome all these proposals The suggestion that they should bear the whole expense of notifying patients of transfers of practice will certainly be opposed Regulation 34 provides that the medical service subcommittee may if they think fit, permit any person concerned in an investigation to be assisted in the presentation of his case by some other person, provided that no person shall be entitled to appear in the capacity of counsel, solicitor, or other paid advocate It is not clear that the secretary of a panel committee might not be regarded as a professional agent Proposals numbered one and twelve appear to be mutually exclusive Practitioners will no doubt object to a right of surgery inspection being conferred upon insurance committees, if any visitation is necessary it should be made jointly, as at present, by representatives of the panel committee and of the insurance committee

Medical Mortgages A Correction

A note appearing in this column on Feb 13th referred to a case in which a firm of solicitors complained to an insurance committee Their complaint, in effect, was that, although the committee was aware of the mortgage of the practice and had, in fact, been paying the panel fees pursuant to the mortgage to other than the practitioner, it had without notice to their clients allowed something to happen to their clients' prejudice We now learn that the mortgage in question was arranged, not by a firm of moneylenders, as stated, but through the scheme for assisting medical practitioners sponsored by the Medical Practitioners' Union Our note, therefore, contained a misstatement of fact, which we regret, and the *misapprehension* led us *into an* implied criticism that certainly would not have been made if we had been aware of the standing of the parties We are informed that the matter was promptly adjusted through the borrower's solicitors and before our note was published, and that the insurance committee was immediately advised of the fact

A Disputed Point in Emergency Treatment

An insurance practitioner Dr A, on visiting one of his bedrid insured patients decided that he should be removed to an institution He arranged accordingly through the public assistance official, and in due course a nurse was sent, but upon arrival at the patient's bedside she doubted whether the patient was fit to be removed to hospital She therefore requested a visit by Dr A in order that he might clear her mind of the doubt as to the patient's fitness to be removed Dr A not being available, the nurse obtained the advice of

Dr B, another local insurance practitioner, who expressed the opinion that the patient was unfit to be removed from his home Dr B rendered an account against the public assistance committee for a home visit to the case on the ground that the service rendered was for and on behalf of that committee It was decided eventually that the assistance committee were not required to pay the account; the matter was one for settlement by the insurance committee since the advice called for and given was in the best interests of the insured person and, as such, was covered by the regulations and terms of service This decision seems to be the right one The second practitioner was called in not so much for the purpose of giving treatment as to certify the condition of the patient, and there is no doubt that it would have been the duty of the responsible practitioner had he been available to comply with the nurse s request for his services on behalf of an insured person

PUBLIC HEALTH

A National Health Campaign

The Central Council for Health Education has been invited by the Ministry of Health and the Board of Education to coöperate in a national campaign to increase the use of the health services At the back of the suggestion is the experience that antenatal clinics welfare centres and opportunities for dental treatment are not made use of to their full capacity and that a well thought out central publicity scheme combined with local personal interest might soon make the health services better known and more widely attended The campaign would start in October on general lines with the sympathetic interest it is hoped of the press and the B B C In the following months effort would be concentrated on particular services maternity and child welfare in November and December home and school in January social hygiene and tuberculosis in February and March The principal cost of the campaign will be borne by the Government but it is expected that every locality will add local colour to the posters folders bookmarks or whatnot by overprinting on them matters of local interest A schedule has been sent out to clerks of councils and medical officers of health asking for some idea of the quantities which could be distributed during each section of the campaign Reply is requested before April 14th to the secretary of the Central Council for Health Education, 1 Thornhaugh-street, Russell-square London W C 1

A Fracture Clinic

The Grimsby and District Hospital which serves a population of about 140 000 is establishing a special clinic for the treatment of patients suffering from fractures deformities and injuries to bones and joints and has made arrangements with the Grimsby corporation by which the corporation contribute towards an honorarium for the surgeon in charge The corporation will also contribute towards the cost of maintaining patients for whom they are financially responsible and for additional and increased services required in the ancillary departments The hospital is to be approved by the Ministry of Health and the Board of Education for short-term orthopædic cases and the coöperation of Harlow Wood Orthopædic Home is to be obtained for long term cases Public assistance cases are to be transferred back to the local authority institution for the period when no active treatment is required and readmitted to the hospital when necessary Mr R Guy Pulvertaft who is at present surgical registrar in the orthopædic and fracture department of Liverpool Royal Infirmary has been put in charge of the new department his appointment being approved by the Grimsby corporation He will live in the town and will engage only in consulting orthopædic practice The Central Council for the Care of Cripples have undertaken to send a trained organiser to inaugurate an after-care orthopædic service on a regional basis

L C C Hospital Budget

Capital expenditure on general and special hospitals under the control of the London County Council is estimated at £100 000 for the year 1937–38 The budget for maintenance is as follows —

	£		£
General hospitals	560 000	Staff	35 000
Infectious hospitals	150 000	Miscellaneous expenses	3 000
Sanatoria	35 000	Sanitary officers	15 000
Children's hospitals	60 000	Public vaccinators	150
Pathological laboratories	10 000	Diagnosis and treatment of venereal diseases	55 000
Maintenance in hospitals other than those provided by the Council &c.	35 000	Maternity and child welfare	5 000
District medical service	7 000	Midwives service	1 000
London ambulance service	30 000	Other public health services	150

Medical Members of the L C C

Medicine is now represented as follows on the various committees of the London County Council

Education —Dr G A Gillison
Entertainments —Dr Bernard Homa
Establishment —Dr Homa and Miss E Rickards
Finance.—Dr S. W Jeger
General Purposes —Dr F Barrie Lambert
Hospitals and Medical Services —Dr C W Brook Dr S Monckton Copeman Mr Somerville Hastings (chairman) Dr Jeger Miss Rickards (vice) with Dr H Winch and Mr R H P Orde (coöpted)
Mental Hospitals —Dr Barrie Lambert with Dr Doris Odlum (coöpted)
Parks —Dr Barrie Lambert
Parliamentary —Dr Jeger
Public Control —Dr Jeger
Supplies —Dr Barrie Lambert
Town Planning —Dr Gillison.
Welfare of the Blind —Dr Brook (chairman)

St Mark s Hospital, London —The annual general meeting of the governors of this hospital was held on March 18th The Lord Mayor who presided said that during the year 1036 1089 patients were admitted to the wards of the hospital and 1280 operations were performed The out patients attendances numbered 10 999 the highest recorded in the history of the hospital It was hoped that the new nurses home would be ready for occupation next January The home which is the first part of an extension scheme would accommodate 50 nurses and 27 maids and it was proposed to convert the space vacated in the hospital into a self contained block for paying patients and a second operating theatre would be provided and additional public beds The pathological and cancer research, X ray and out patient departments would also be enlarged and modernised The response to the appeal for £50 000 to pay for these extensions had now reached the sum of £14,000 The income of the hospital during the past year had been £14 422 as against £17 300 in the previous year and the expenditure had amounted to £16 270

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Deaf Children (School Attendance) Bill

IN the House of Lords on March 18th the Earl of CRAWFORD moved the second reading of the Deaf Children (School Attendance) Bill which has already passed through the House of Commons without opposition The proposal was, he said that the age for the compulsory attendance of deaf school children, which was at present 7 years should become 5 in the future This was the age of attendance in Scotland and informed opinion in England was unanimous in thinking that the same age should be imposed here Great progress had been made in recent years in the education of deaf children and he was glad to say that the number of deaf children had been reduced, because deafness as a sequela of such illnesses as measles or scarlet fever was being reduced by increased medical knowledge But deaf children required a great deal of education in order to be taught to speak intelligently In normal education the last two years of the educational career were the most valuable, in the case of deaf children it was the first two years because a child, through the influences of the home or the absence of education might either develop a peculiarity of inflection of voice, or insistence upon certain aspects of the voice which were very deleterious to its future, or else it heard wrongly The younger the child, therefore, the better the chance of education So far as he knew the local education authorities the teaching profession, and the medical profession agreed on this point, so that the authority for this proposal was very strong indeed In matters of speech and audition the intuition of a child aged 5 was greater than of one aged 7, and at 7 than at 9 The experience of parents coincided with that of teachers the public authority and the medical world, and he believed that the Bill was unanimously supported In Manchester where the subject was more developed and more studied than in any other town, no fewer than 90 per cent of the children who were congenitally deaf learned to use the human voice perfectly and 90 per cent of those children got employment when they left school

The Earl of LUCAN, speaking for the Government said that it did not seem necessary now to continue this difference on behalf of these young children He was informed that the majority of deaf children aged 5–7 now attended school voluntarily Various organisations connected with the education of the deaf had from time to time urged that legislation to this effect should be introduced and only last summer the President of the Board of Education had said in the House of Commons that he was ready to agree to legislation on the subject provided that it was entirely uncontroversial and that it was supported by local authorities and other organisations The Government were very glad to give this Bill their support The cost of the change was estimated at not more than £5000 a year

The Bill was read a second time

Factories Bill in Committee

The Factories Bill was further considered by a standing committee of the House of Commons on March 16th and 18th

A SAFEGUARDING CLAUSE

On Clause 17 (which provides that in the case of any machine in a factory intended to be driven by mechanical power certain specified parts shall be so sunk encased or otherwise effectively guarded as to prevent danger and that any person who sells or lets on hire for use in a factory any machine intended to be driven by mechanical power which does not comply with the clause shall be guilty of an offence and liable to a fine not exceeding £100), Mr SILKIN moved an amendment to the prov that the clause should not apply to machin constructed before the passing of the Bill into l He proposed that the words "in use" should substituted for the word "constructed"—Sir SIMON opposed the amendment which was negativ —Mr VIANT said that machinery constructed p to the passing of the Bill into law could whoe purchased it be installed in a new factory in s of constructional defects—After further discuss the clause as amended was agreed to

DANGEROUS LIQUIDS

Clause 18 (which provides that certain kinds vessels containing dangerous liquids shall be secur covered or fenced or where that is not practical all practicable steps shall be taken to prevent a person from falling into the vessel), Mr GEOFFR LLOYD, replying to several hon members, said t Home Office officials would examine the position see whether any supplementary provision was nee with regard to movable vessels containing danger liquids and the clause was agreed to

Clause 19 (which deals with safety in relation self acting machines) was agreed to

DANGER TO WOMEN AND YOUNG PERSONS

On Clause 20 (which provides that a woman young person shall not clean any part of a prime mov or of any transmission machinery while the pri mover or transmission machinery is in motion, shall not clean any part of any machine if t cleaning would expose them to risk of injury fr any moving part of that machine or adjac machinery)—Mr G MANDER moved one of a se of amendments which were designed to extend prohibition in the clause to all workers in facto unless the cleaning was performed by means of mechanical device which enabled the person do the cleaning to remain at a distance from the pr mover or transmission machinery which, in opinion of the chief inspector, provided for t safety—Sir J SIMON said that the clause represen an important advance in the law, especially latter part It was no good laying down rules w were in conflict with inescapable practice, or hav a law which in his opinion would not be gener observed The proportion of accidents in fact while cleaning machinery was much higher am women and young people than among men—Mr H DAVIES said that the clause did go a great deal furt than the present law—After discussion the am ment was withdrawn and the clause was agreed to

ELEVATORS AND STAIRS

Clause 21 (which provides among other things every hoist or lift shall be of good mechanical struction sound material, and adequate stre and be properly maintained, and that every h way or liftway shall be efficiently protected b substantial enclosure fitted with gates, the enclo being such as to prevent, when the gates are s any person falling down the way or coming contact with any moving part of the hoist or lift) agreed to with minor amendments

Clauses 22 and 23 dealing with chains ropes li tackle, cranes and other lifting machines were agreed to

Clause 24 (providing that all floors steps st passages, and gangways shall be of sound constru and properly maintained, and dealing also handrails) was agreed to with minor amendm as well as Clauses 25 and 26 relating to safe m of access from workshops and precautions in p where dangerous fumes are liable to be present.

Clause 27, which lays down the precautions shall be taken with respect to explosive or in dust gas vapour or substance was agreed to minor amendment

use 28, which lays down safety provisions with t to steam boilers was also agreed to with amendments as well as two further clauses g with steam receivers and steam containers ir receivers

lause was also approved empowering the chief tor to grant exceptions from some of the safety ions where he was satisfied that they could not ably be applied, another enacting the pre- ns that are to be taken with respect to water- gasholders as well as Clause 33 providing tail for means of escape from factories in case

the House of Commons on March 16th the cal Training and Recreation Bill was introduced ead a first time On March 19th the financial tion in connexion with the Special Areas as agreed to in Report and the Bill was brought l read a first time

March 18th Mr BALDWIN Prime Minister nced that the Chancellor of the Exchequer l open his Budget on Tuesday April 20th

the House of Commons on March 22nd Sir SLEY WOOD Minister of Health presented the ws' Orphans and Old Age Contributory ons (Voluntary Contributors) Bill a measure tend the classes of persons who can become d as voluntary contributors for the purposes dows orphans and old age contributory ons and otherwise to amend, in relation to tary contributors and women engaged in n excepted employments the enactments ng to such pensions and to health insurance nend Section 30 of the Widows Orphans Old Age Contributory Pensions Act 1936 ection 4 of the Northern Ireland (Miscellaneous sions) Act 1932 and for purposes connected the matters aforesaid

e Bill was read a first time

QUESTION TIME

WEDNESDAY MARCH 17TH

British Hospital Ship in Spanish Waters

MANDER asked the Secretary of State for Foreign which of His Majesty s ships would maintain with His Majesty s diplomatic and consular repre tives at Valencia Bolivia Palma and elsewhere in sh ports during the next few weeks —Mr EDEN d: It has been arranged that His Majesty s hospital *Maine* together with at least one destroyer and one ship shall be available on the north-east coast of and Majorca for the purpose to which the hon ber refers. In addition to these I understand that her is at present available

Alcohol and Road Accidents

WILSON asked the Home Secretary whether in aining of the new 800 police patrols, any instructions l be given in the steps to be taken to make effective dvice in the Road Code to motorists against taking ol during or before driving —Mr GEOFFREY LLOYD r-Secretary Home Office replied I think the hon er must refer to the paragraph which says: Before the road be sure that your alertness or sense of on is not affected by alcohol or fatigue I do not this is a provision which could be very well enforced e police

Lunacy and Mental Deficiency Statistics

RALPH GLYN asked the Minister of Health the nt number of certified lunatics in the asylums of nd and Wales under the administration of county rities; and how these figures compared with the s in 1926 and 1913 —Sir KINGSLEY WOOD replied mber of certified mental patients in mental hospitals ded by local authorities (i e county and county borough councils and a certain number of non-county borough councils) in England and Wales was as follows

1937 (Jan 1st)	123 609
1926	107 836
1913	103 842

Sir RALPH GLYN asked the Minister of Health how many mentally-defective individuals were under the care of mental hospitals and asylums and how many were boarded out under licence and how these figures compared with those of 1926 and 1913 —Sir KINGSLEY WOOD replied: The Mental Deficiency Act of 1913 did not come into operation until April 1st 1914 but the numbers of mentally defective patients under care in institutions provided under the Mental Deficiency Acts 1913–1927 and on licence are as follows:—

	In institutions	On licence from institutions
1936 (Jan 1st)	37 810	2 437
1926	20 207	Not available

THURSDAY MARCH 18TH

Holidays with Pay

Mr ROWSON asked the Minister of Labour the names of the members of the commission to inquire into the question of holidays with pay and when they would commence their duties.—Mr ERNEST BROWN replied I hope to be able to make a statement on this matter very shortly

Textile Industry and 40 hour Week

Mr WILLIAM ROBINSON asked the Minister of Labour whether any instructions had been given to the British delegation to the world textile conference at Washington as to their attitude in the event of a 40 hour week in the textile industry being proposed by some other delegation —Mr ERNEST BROWN replied The conference at Washington in April is a technical conference the object of which is to consider all those aspects of the textile industry which directly or indirectly may have a bearing on the improvement of social conditions in the industry The question of adopting a convention for a 40 hour week for the industry is to be considered at the annual conference of the International Labour Organisation in June The attitude of H.M Government towards the latter question was stated in my speech at the annual conference last year

Birching of Young Boys

Mr MUFT asked the Home Secretary whether he was aware of the public concern caused by the action of various magistrates in ordering the birching of young boys for minor offences and whether he would institute an inquiry into the desirability of abolishing this form of punishment —Sir JOHN SIMON replied: There were 164 cases of this punishment being ordered in juvenile courts in 1930 and 218 cases in 1935 This is a subject on which many people have strong views on one side or the other and in which the practice of different juvenile courts differs widely I have therefore decided to appoint a small departmental committee to consider the whole matter If however the report of such a committee is to be of value its members must be selected with a view to securing that they approach the subject with an open mind and I shall not be able to make an announcement of the composition of the committee without full consideration of the appropriate personnel

Hours of Employment of Young Persons

Mr WALKDEN asked the Home Secretary whether he had given consideration to the report of the departmental committee on the hours of employment of young persons in unregulated occupations and whether he intended to give legislative effect to the committee s recommendations

Mr DENMAN asked the Home Secretary whether he had considered the statement in the report of the Committee on Hours of Employment of Young Persons in unregulated occupations that it was essential that immediate steps should be taken to afford statutory protection to such young persons whether he would introduce legislation without unnecessary delay and whether in particular he would adopt the recommendation to extend the current Factories Bill so as to include young persons employed in connexion with factories, docks, and warehouses —Sir JOHN SIMON replied The report of the committee, which was only published a week ago is now under careful consideration but I regret that I am not in a position at present to make any statement

Mr DENMAN Can my right hon friend answer the last part of my question referring to the current Factories Bill Are the Government making up their minds rapidly on that point ?

Sir J SIMON I agree that it would be useful to get a decision in time for the present Factories Bill, but the report is a most important one, it was published only last week and it must be examined thoroughly

Night Work and the Health of Juveniles

Mr DENMAN asked the Minister of Health whether he had or will obtain from approved societies any information as to the effect of nightwork in factories on the health or physique of young persons either at the time or in subsequent life —Sir KINGSLEY WOOD replied I regret that I have not the information desired by my hon friend, and the records of approved societies do not contain the necessary material from which the information could be obtained

Influenza and the Common Cold Medical Research

Mr LEES-JONES asked the Lord President of the Council (1) over what period experiments and research had been taking place, with the assistance of the Medical Research Council towards finding a medium for the prevention and cure of the common cold and influenza, and what the cost had been to date, and (2) what progress had been made by or under the ægis of the Medical Research Council within the past 12 months towards finding a medium for the prevention and for the cure of the common cold and influenza —Mr RAMSAY MACDONALD replied Research on influenza and the common cold has been assisted by the Medical Research Council from time to time In particular the investigations into influenza which are now being made by the Council's own staff at the National Institute for Medical Research have been in progress since 1933 An account of recent progress is given in the annual report of the Medical Research Council for the year 1935–36, presented to Parliament and published last Tuesday During the past year there has been further confirmation from different parts of the world that the virus originally isolated at the National Institute for Medical Research in 1933 is the infective agent which causes epidemic influenza, and on this basis attempts to devise preventive measures are being continued Substantial progress has been achieved by these scientists working in the service of the British Government, and there is considerable ground for hoping that a satisfactory means of producing at least temporary immunity will be evolved Earlier methods of inoculation against influenza have been unsatisfactory, because they were not based on the accurate knowledge, which is now believed to be available, regarding the nature of the causative agent

The Council are not at the moment supporting any direct attack upon the common cold, but the problems are closely related, and an advance against the one disease is likely to assist attack on the other A statement which has been made in the Press to the effect that the Council has, as a matter of policy abandoned work on the common cold is without foundation It is not possible to state the cost of this investigation separately from that of other work involving the same personnel and equipment

Sale of Unsuitable Spectacles

Mr ROBERT TAYLOR asked the Minister of Health if he had any information as to the detrimental effect caused by the wearing of spectacles sold by certain stores and by pedlars with no qualifications as opticians, and if he proposed to take steps to prohibit such sales —Sir KINGSLEY WOOD replied I have no direct evidence of damage caused by the wearing of the spectacles referred to and I have no power to prohibit their sale So far, however as insured persons are concerned it is proposed to make regulations to the effect that spectacles provided by way of additional benefit can only be obtained fr opticians recognised by a committee to be set up under regulations

The Construction of Gas Masks

Mr CREECH JONES asked the Home Secretary what the flocculent material being used as a filter for smo in the gas masks now being manufactured in Blackb for free distribution to the civilian population, what (if any) had been the percentage of smoke wh had passed through this material when subjected experiments —Mr GEOFFREY LLOYD replied T material employed as a filter for smokes in the gas ma now being made at Blackburn for distribution to civilian population consists of a mixture of wool asbestos Extensive tests with toxic smokes have pro that the respirator will afford protection against all poison gases under the conditions which would arise practice

Death Following Vaccination

Mr GROVES asked the Minister of Health whether had made inquiries into the death of Frank A Bar aged 24, of Grantham road, Manor Park, which attributed by the Ilford coroner to the effects of vacci tion, what was the source of the lymph used, whet rabbits had been used in its manufacture, whether young man's employers made vaccination a condit of employment, and, if so, whether, under the Workme Compensation Act, his widowed mother would rece damages —Sir KINGSLEY WOOD replied The ans to the first part of the question is in the affirmat With regard to the second and third parts, I am infor that the lymph used was obtained from a commer firm, and I understand that rabbits were not used connexion with its manufacture I have no informat as to the fourth part of the question, and I am unable express any opinion in regard to the last part

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK EN MARCH 13TH, 1937

Notifications —The following cases of infec disease were notified during the week Small p (Ripley, U D, Derbyshire), scarlet fever, diphtheria, 1086, enteric fever, 30, pneum (primary or influenzal), 1209, puerperal fever, puerperal pyrexia, 110, cerebro-spinal fever, acute poliomyelitis, 3, acute polio-encephalit encephalitis lethargica, 3, dysentery, 25, ophth neonatorum, 81 No case of cholera, plague, or typ fever was notified during the week

The number of cases in the Infectious Hospitals of the Lo County Council on March 16th was 3336 which inclu Scarlet fever 857 diphtheria, 1060 measles 23 who cough 606 puerperal fever 20 mothers (plus 14 b encephalitis lethargica 282 poliomyelitis 1 At Margaret's Hospital there were 16 babies (plus 5 mot with ophthalmia neonatorum

Deaths —In 122 great towns, including Lon there was no death from small pox or enteric fe 9 (0) from measles, 3 (0) from scarlet fever, 2 from whooping-cough, 34 (6) from diphtheria, 48 from diarrhœa and enteritis under two years 144 (12) from influenza The figures in parent are those for London itself

Birmingham reported 3 deaths from measles Fatal of whooping-cough were scattered over 15 great towns Mi brough had 3 Fatal diphtheria was reported from 20 towns, 3 each from Bradford and Sheffield

The number of stillbirths notified during the was 305 (corresponding to a rate of 46 per 1000 births), including 46 in London

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MIDDLESEX HOSPITAL —At a meeting of board of this hospital on March 17th it announced that the anonymous donor of the n home had given a further £50,000 for its extension, bringing his benefactions to the hospital to £400 000

MEDICAL NEWS

sity of Oxford

congregation to be held on May 4th decrees will be ward proposing that Mr G R Girdlestone be nted Nuffield professor of orthopædic surgery while the office of clinical director of the Wingfield Orthopædic Hospital. Mr Girdlestone will receive ry as professor but will not be debarred from practice He will hold the title till he is 65 or o resigns from his position at the hospital if he do so before he reaches the age-limit It will also posed that Dr J A Gunn professor of pharma t Oxford be appointed Nuffield professor of thera while holding office as director of the Nuffield o of Medical Research He will receive £1200 a Nuffield professor

sity of London

H. L. Eason has been appointed to the post of al of the University from July 1st 1937 to 0th, 1941

ason, who was born in 1874 was educated at University London and at Guy's Hospital. He qualified in medicine and took his M D degree in 1901 and his M.S degree when he became warden of the medical college at He held this post till 1906, when he was appointed ic surgeon to the hospital From 1904 to 1915 he was of the medical school During the war he served with al Army Medical Corps as consulting ophthalmic surgeon forces in the Mediterranean, Egypt and Palestine and ntioned in dispatches He was awarded the C.M G in d the C.B in 1919 In 1920 after his return, he was l to his present position of superintendent of Guy's retaining his appointment on the honorary medical e is also consulting surgeon and member of the medical council of the Admiralty Last year the Royal College eons of England elected him to their fellowship represented the faculty of medicine on the senate of ersity since 1911 and two years ago was appointed vice- r He has been chairman of the library committee ee committee and the academic council Since 1925 represented the university on the General Medical Council he is now junior treasurer From 1924 to 1926 he was er of the departmental committee of the Board of Edu on the reconstitution of the university, and from 1923 to member of the departmental committee of the Ministry th on post-graduate medical education He is a member overning body of the British Postgraduate Medical School, one of the representatives of the Ministry of Health on eral Nursing Council.

ersity of Leeds

W MacAdam, formerly professor of clinical medi has been elected to the chair of medicine in succession G W Watson and Dr J le F C Burrow formerly sor of pharmacology and therapeutics to the chair ical medicine Dr S J Hartfall has been appointed vacant chair with the title of professor of thera- cs and applied pharmacology

Hartfall is a graduate of the University of Leeds in and medicine. He took his M.B in 19 6 and in 1930 e a member of the Royal College of Physicians of London following year he graduated as M.D with distinction. holding many resident posts at Leeds General Infirmary ent to Guy's Hospital as medical assistant, and in 1932 ed a Leverhulme scholarship from the Royal College of cians for work on anæmia and gastric secretion. Dr all was elected hon. physician to Leeds Public Dispensary 4 and assistant physician to the General Infirmary in and is an hon demonstrator of pathology in the univer- His published work has been largely concerned with the ion of the stomach but our readers will also recall his le reports on the use of gold in rheumatic diseases as ed at the Leeds Public Dispensary Dr Hartfall holds torial commission in the Royal Army Medical Corps.

s Hilary Long has been appointed to the newly uted readership in surgery

s Long was a student at King's College London, where ained her B.Sc in 1928 and her M Sc in 1935 She ied in medicine in 1931, and in the same year obtained her ond with honours She has held the posts of house and radium registrar at King's College Hospital From 1933 she worked in Vienna with a travelling studentship the University of London, and on her return took the S. Eng Miss Long was for some time resident surgical at the Royal Manchester Children's Hospital

William Goldie who has been doing research work matism at the Leeds Public Dispensary has been the status of research fellow by the University C Coates has been appointed demonstrator in my

Royal College of Physicians of London

At a meeting of the College held on March 22nd Viscount Dawson of Penn was re-elected president Sir Francis Fremantle was appointed a delegate to the eighth Imperial Social Hygiene Council to be held in London from July 5th to 9th

A licence to practise was granted to W J C Crisp (Univ Coll Hosp) and diplomas in medical radiology were conferred jointly with the Royal College of Surgeons upon the following candidates —

G G Binnie Frederick Constant Mary J Cronin and J M. Lees.

Diplomas in ophthalmic medicine and surgery were granted to the candidates mentioned in our issue of March 20th (p 730)

University of Liverpool

At recent examinations the following candidates were successful :—

M CH. ORTH

F C. Dwyer and T U Ley

D & M.R.E.

Part I—M. J Brady J Courtney T F J O'Farrell and J A Ross M.A.

D.P.H.

Part I—E. Agius J. A Bentham, R T Bowes H R G Davies A. Dodd Bessie Dodd, J G Hallwood and Joy C Lowe

D T.M.

P G Barrow A. H Casson G V Craine, F W Crook S. K. Ghose Roberta I Hutchinson, C H Kotak, L Luanprida G B Ludlam Y M Siddique J H R Syed and Luise Wisfield.

D T H.

J E. O Amegatcher E. Bradbury, M. H Gomaah B J Green S. Hazra J D Robertson S Saleem T S. Subramaniam and J W Summerbeyes

Dr G B Ludlam was recommended for the A H Milne medal

Naval Medical Compassionate Fund

A meeting of the subscribers to this fund will be held at 3 P.M. on April 16th at the medical department of the Navy Admiralty London S W to elect six directors of the fund

Joint Tuberculosis Council

A combined clinical and radiological course on diseases of the chest will be given under the auspices of this council at the Royal Chest Hospital, City road, E C from Wednesday March 31st to Saturday April 3rd. The lectures and demonstrations will be given by Dr R R Trail and Dr Peter Kerley Further information may be had from Dr William Brand hon. secretary for post-graduate courses for the council 8 Christ Church place Epsom

Hunterian

A gold m arded annually by this society for the best es by a general practitioner The subject for prognosis and care of heart disease in general nd for 1938 the management of inoperable disease in general practice The medal for awarded to Dr L. J A. Parr of Sydney for his essay on rheumatoid arthritis Any regu ctitioner resident within the British Empire is e. A copy of the rules may be had from the hon secretary Mr A E Porritt 27 Harley-street London W I

Oxford Ophthalmological Congress

The twenty-sixth annual meeting will be held at Keble College from July 7th to 10th Mr Bishop Harman and Mr Arnold Sorsby will open the first discussion on the problem of myopia, and the Doyne memorial lecture will be delivered by Dr D J Wood who will speak on night blindness in eye disease. Papers will also be given by Prof Joseph Imre (Budapest) Sir Walter Langdon Brown Mr Tudor Thomas, Mr Bernard Chavasse Dr Bernard Samuels (New York) Group-Captain J M Guilfoyle and Wing-Commander P C Livingston. Further information may be had from the hon secretary F A. Anderson 12 St John's-hill Shrewsbury

THE French Government have conferred the distinction of Officier de la Legion d'honneur upon Dr Kenneth Eckenstein, physician to out patients at the French Hospital, London

Beit Fellowships for Medical Research

A notice in our advertisement columns states that an election of junior fellows will take place next July

Welsh National School of Medicine

Dr J Hardstaff West has been appointed lecturer in anaesthetics Dr T J Hennelly lecturer in mental diseases, and Dr F R Bei ley lecturer in dermatology and lecturer in venereal diseases (male)

Medical Superintendents' Society

Dr J D Ewart presided at the annual dinner of this society which was held at the Langham Hotel, London, on March 20th It was his last chance to preside, as in two weeks time he is retiring from the Booth Hall Infirmary for Children Manchester, which he has ably superintended for so long Sir Cuthbert Wallace proposing the toast of The Society told the story of the development in his time of his own hospital, a period coinciding with the life of the society Both then and now there were eight surgeons and eight physicians but the two special departments had developed out of knowledge pathology had grown out of its one small room into an institute, and the X ray department was now more expensive even than the surgeon He spoke of hospital construction as a compromise in which the help of members of the society was required Dr D'Ewart, in response, inquired why one surgeon never used the same kind of knife as any other surgeon and indicated how the surgeon could be bluffed At Booth Hall the first X ray department was pushed into a housemaid s pantry and a neighbouring chemist brought in to work it Dr W A Ramsay, another Manchester superintendent proposed The Guests, giving each sympathetic but searching attention he condoled with the medical press on having to deal with writers who drew sweeping conclusions from a series of five cases two of which were definitely proved Dr Adolphe Abrahams and Dr Ernest Ward responded, the former remarking pitifully that man is the only animal who indulges in after dinner speaking, all the others have the sense to lie down and go to sleep Representatives of voluntary hospitals were apt to speak of the *threat* of State control by the stroke of a pen The word, he thought, should be *promise* he was more and more impressed by the organisation resources and wealth of material of the rate aided hospitals and there must surely come a time when the resources of all the hospitals would be pooled At intervals during the dinner Mr Michael North intervened with entertainment

Fractures and Industry

The waste of working time and of evolv paid in compensation after accidents is so impor fluenza the Minister of Health and the Home Secretar based on th up a committee to consider how they can b o available Mr R S Hudson Parliamentary Secretary t y of Health, spoke of the work of the new comm ent supp cheon given on March 10th by the Industrial We , but the He asked for the influence of the society in ga nst the ou erest both of employers and of workers associa er A st ustrialists had in some cases been sufficiently o effec with the amount of suffering caused by injuries, done with the loss of time and wages involved as to contribut substantially to the cost of treatment At the same luncheon Mr H E Griffiths who is organising the treatment of accidents as it is to be carried out at the new Albert Dock Hospital, under the management of the Seamen s Hospital Society and who has been investigating in the United States the methods in various industrial centres said he learnt four main lessons of which the first is the importance of segregating all fractures under one control the standard of training of the ambulance service should be high and rehabilitation should start immediately after the accident and be kept constantly in the forefront Good feeding he decided is the most important of all At the Albert Dock Hospital out patients are to be treated from 9 A M to 6 P M and to be given three meals a day There is to be a shock room wards with adjacent dressing rooms and a training room with gymnasium and swimming bath The im point, he said was to keep the injured part at and it is possible to do this painlessly by modern m for which he paid a tribute to the genius of Lore iz Drawing attention to the vastness of the proble had to be considered Mr Hudson said that in 19 than 1 300,000 accidents were treated at hospi Great Britain, these included 200 000 cases of fi In 1934 accidents in industry had caused 400,000 l cases and had involved the payment of about £4,(in compensation to the victims

Medical Diary

Information to be included in this column should reach in proper form on Tuesday and cannot appear if r read us later than the first post on Wednesday morning

LECTURES, ADDRESSES, DEMONSTRATION , &c

BRITISH POSTGRADUATE MEDICAL SCHOOL Duca road W

TUESDAY March 30th —4 30 P M Dr Gardi ner Hi Endocrine Diseases and Disturbances

WEDNESDAY —Noon clinical and pathological c nfer (medical) 3 15 P M clinical and patholo ical c ference (surgical) 4 P M Mr J E H Robe Surgery of the Chest

THURSDAY, April 1st —Noon clinical and pa holog conference (obstetrics and gynæcology) 2 30 P, Dr Duncan White Radiological Demonstrati 3 30 P M, Mr A K Henry Demonstrations on t Cadaver of Surgical Exposures 3 30 P M Dr Beattie Neoplasms of the Ovary

FRIDAY —2 P M operative obstetrics 3 P M departm of gynæcology pathological demonstration

Daily, 10 A M to 4 P M medical clinics surgical clin and operations obstetrical and gynæcological clin and operations

CENTRAL LONDON THROAT NOSE AND EAR HO PITAL Gray s Inn road W C

FRIDAY April 2nd —4 P M Mr N Asherson Affecti of the Lingual Tonsil

HAMPSTEAD GENERAL AND NORTH WEST LOND HOSPITAL N W

WEDNESDAY March 31st —4 P M Dr T J Hollins T Medical Aspects of Chemical Warfare

WEST LONDON HOSPITAL POST GRADUATE COLLEC Hammersmith, W

TUESDAY March 30th —10 A M medical wards 11 A surgical wards 2 P M operations medical, surgi and throat clinics

WEDNESDAY —10 A M children s ward clinic 11 A medical wards 2 P M gynæcological operatio medical surgical and eye clinics

THURSDAY April 1st —10 A M neurological and gyn logical clinics Noon fracture clinic 2 P M, ope tions medical surgical and genito urinary and clinics

FRIDAY —10 A M medical wards skin clinic. No lecture on treatment 2 P M operations, medic surgical and throat clinics

SATURDAY —10 A M children s and surgical clinic 11 medical wards

FELLOWSHIP OF MEDICINE AND POST GRADUA MEDICAL ASSOCIATION Wimpole street W

SATURDAY April 3rd —PRESTON HALL Maidstone Ke All day demonstration on pulmonary tuberculosis

ST JOHN CLINIC AND INSTITUTE OF PHYSICAL MEI CINE 42 Ranelagh road S W

FRIDAY April 2nd —4 30 P M Dr A P Cawadia Diseases of the Bone Simulating the Rheuma Diseases

GLASGOW POST GRADUATE MEDICAL ASSOCIATIO

WEDNESDAY, March 31st —4 15 P M (Royal Samarit Hospital for Women) Dr John Hewitt Gynæc logical Cases

Appointments

*BOYES KATHLEEN M M B Manch D P H Assistant Medic Officer for Maternity and Child Welfare for Salford

CLARK GEORGE M B Liverp D T M D T H D P H Medic Officer of Health for Ruislip and Northwood Urban Distric

JEFFCOATE T N A M D Liverp F R C S Edin Ho Assistant Gynæcological Surgeon to the Victoria Centr Hospital Wallasey

KERWICK ALAN M B Resident Medical Officer at the Middl sex Hospital

LEVI DAVID M.S Lond F R C S Eng Hon Surgeon to th London Jewish Hospital

MAIR A M M B Aberd Resident Surgical Officer at th Blackburn and East Lancashire Royal Infirmary

MCMENEMEY W H D M Oxon M R C P Lond D P M Assistant Clinical Pathologist at the Radcliffe Infirmar Oxford

PULVERTAFT R G M B Camb F R C S Eng Surgeon Charge of the Fracture and Orthopædic Department of th Grimsby and District Hospital

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* Subject to confirmation